The OIL WEEKLY

"What's His Measure?"

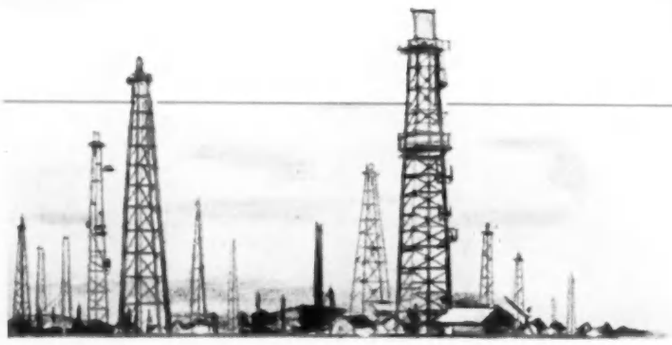
"Whose?". . ."The HOWCO Service Man's"

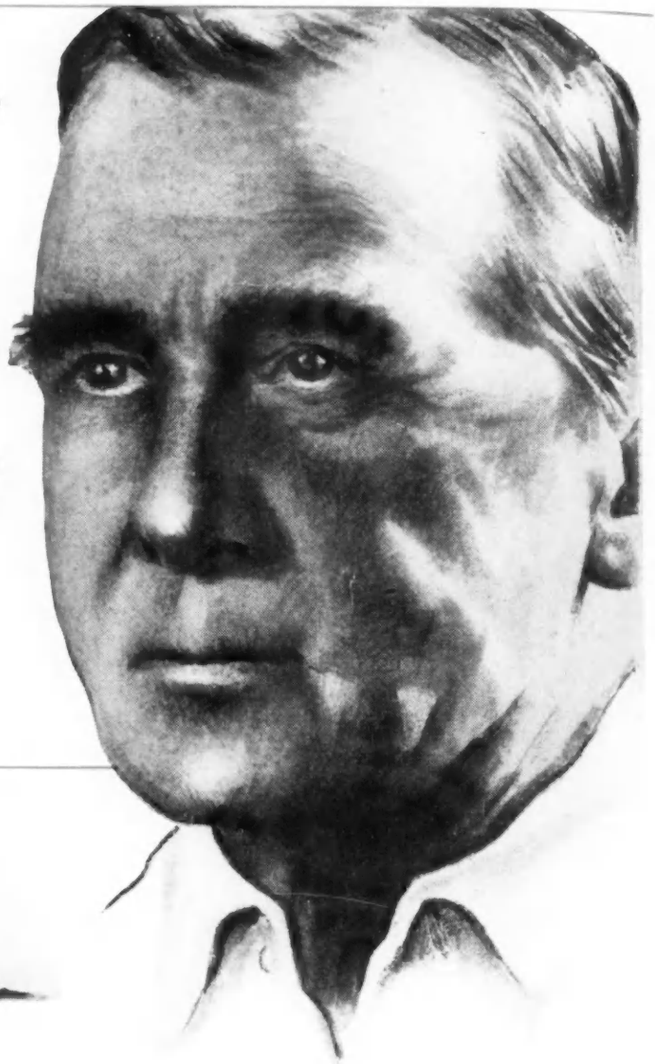
He is measured by what an oil operator needs and expects—experience, energy, resourcefulness, progress. Strong, healthy and loyal, he accepts every assignment as a personal challenge and a serious responsibility. Back of him is a service record of success; ingrained in his nature is a high order of character and integrity . . . Your job is in safe hands when entrusted to such a man!

HALLIBURTON OIL WELL CEMENTING CO.
DUNCAN, OKLAHOMA

TWO MILES OF CASING SET . . . BUT

NOT A MINUTE WAS LOST!





THEY had drilled to a depth of 11,704 feet in this Louisiana well. Bottom-hole temperature was 324°. Now they faced the big job of setting and cementing that two-mile-long string of casing.

A heavy investment in money, machinery, and time was at stake. They played safe. They chose *improved* Unaflo—the cement with the "retarded" set. They mixed and pumped 1,488 sacks. They moved the slurry 11,704 feet down. It remained fluid and pumpable the entire 96 anxious minutes.

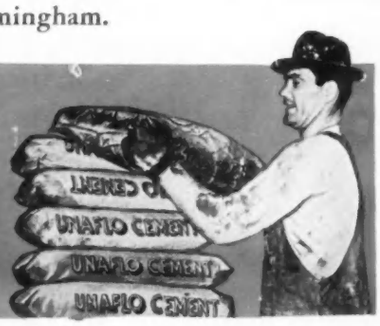
"A perfect cementing job," grinned the "Super." "Not a minute was lost during the entire operation."

Because the "retarded" set of *improved* Unaflo keeps it fluid and pumpable for extended periods and under high pressures and temperatures, it is widely used as a cement that provides a high factor of safety. For detailed information see Composite Catalog, or send for a copy of "Case Histories of Oil-Well Cementing." Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Amicable Bldg., Waco; Oklahoma City; Kansas City; Chicago; Birmingham.

OW-U-40

IMPROVED UNAFLO

PRODUCT OF UNIVERSAL ATLAS CEMENT COMPANY



Specialized Oil Publications of
THE GULF PUBLISHING COMPANY

☆

The OIL WEEKLY and The COMPOSITE CATALOG
for the drilling-producing-pipeline industry

PETROLEUM REFINER and The REFINERY CATALOG
for the refining-natural gasoline industry

LOOKING AHEAD
. . . with the Editor

THE influence of geological factors on secondary recovery operations is the subject that will be discussed in the second of the series of articles on secondary recovery methods now appearing in THE OIL WEEKLY. This forthcoming article, which will be published next week, will point out what geologic factors have to be taken into consideration in determining the possibilities of secondary recovery and in selecting the method of secondary recovery best suited to meet certain conditions. Such factors as sand uniformity, texture and mineralogical composition, shape of structure, depth of sand, porosity, permeability, water saturation, etc., will be considered by its five joint authors.

THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

Published by THE GULF PUBLISHING COMPANY, Houston, Texas

R. L. DUDLEY, *President, Publisher* A. L. BURNS, *General Manager*

TOM W. NELSON, *Advertising Manager*

ADVERTISING STAFF

DICK SWINSKY.....New York
T. WM. DODDS.....Pittsburgh
H. G. FITZPATRICK.....Chicago
J. F. CARTER, JR.....Tulsa
JAY CURTS, JR.....Los Angeles
CHAS. WYATT.....Houston

BRANCH OFFICES

NEW YORK.....250 Park Ave. (17)
PITTSBURGH.....429 Fourth Ave. (19)
CHICAGO.....332 S. Michigan Ave. (4)
LOS ANGELES.....W. W. Wilson Bldg.
Huntington Park, Calif.
TULSA.....Hunt Bldg. (3)
FORT WORTH.....W. T. Waggoner Bldg.
WASHINGTON.....Albee Bldg.

CIRCULATION DEPARTMENT

G. D. CROFTON.....Manager

Member Audit Bureau of Circulation and Associated Business Papers, Inc.

EDITORIAL STAFF

WARREN L. BAKER
Editor

J. KENT RIDLEY
Managing Editor

L. J. LOGAN
Associate Editor

DISTRICT EDITORS

B. F. LINZ.....Washington
FRANK TAYLOR.....Tulsa
H. H. KING.....Fort Worth
R. W. BYRAM.....Austin
E. S. BUNCH.....Los Angeles
ELTON STERRETT, RIVERS REAVES, A. R. McTEE, DON L. CARROLL, TOM L. TURNER.....Houston

Contents • November 29, 1943
Volume 111, No. 13

The Changing Panorama..... 9

Technical and Feature Section:

Horizontal Wells May Revolutionize Secondary Recovery.....11
By C. O. FAIRBANK

Extending Centrifugal Pump Life Through Resizing by Metallizing.15
By ELTON STERRETT

Determining Probability of Success of Secondary Recovery Operations, Part I.....17
By JO H. CABLE

Use of Fluorescent Surface Surveys and Subsurface Logs to Find Oil.....22
By TOM L. TURNER

Field Reconditioning of Milling Cutters Speeds Side-Tracking Jobs.28
By ELTON STERRETT

Practical Operating Hints for the Production Man.....30

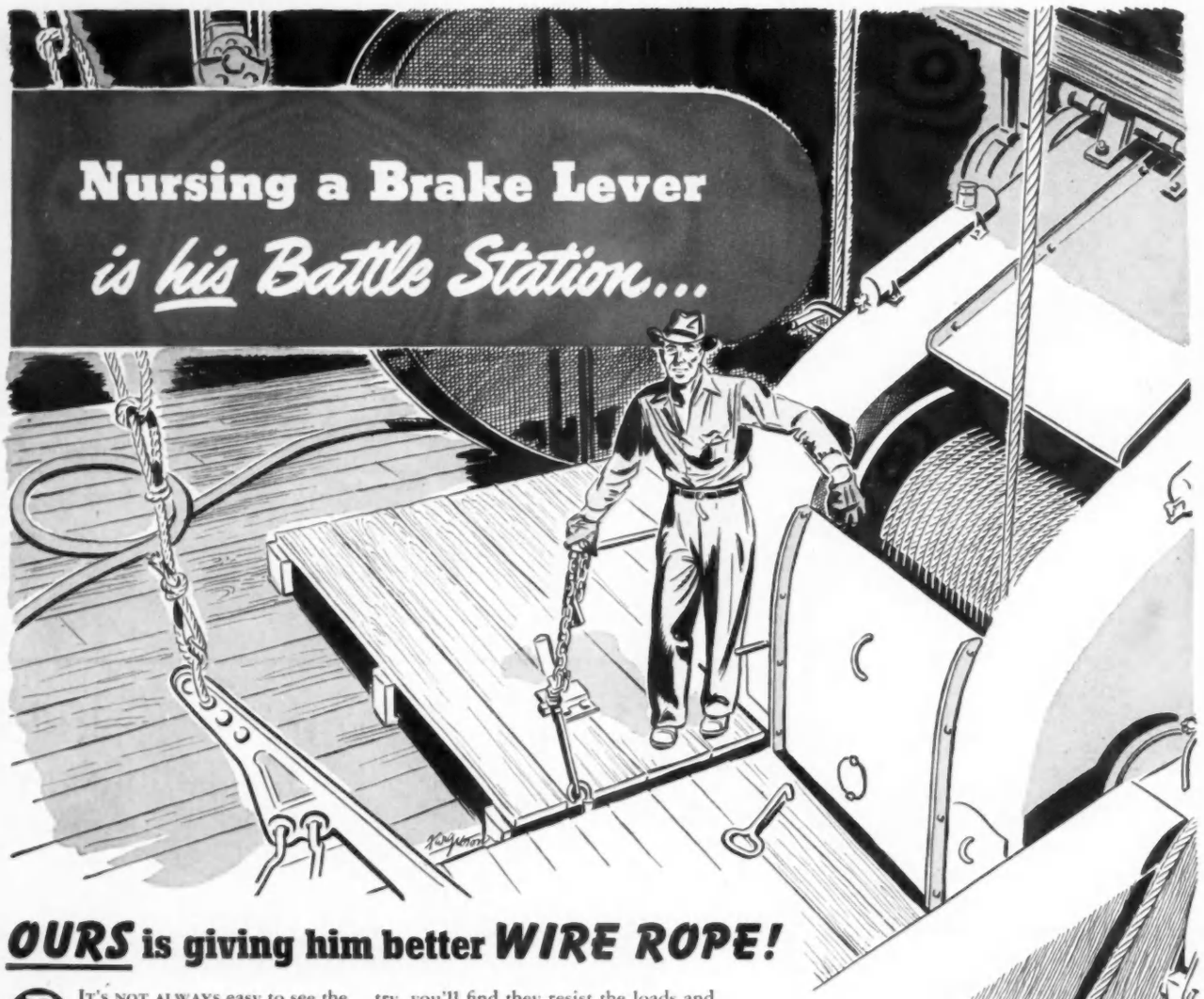
News and Departments:

Looking Ahead with the Editor..... 7
Washington Roundup 33
Markets, Statistics and Prices.....39
United States Field Operations 41
United States Well Completions 49
United States Wildcat Starts 56
Squeaks from the Bull Wheel.....58
Notes for the Equipment Buyer and User.....60
Men in the Industry's News.....64
Index to Advertisers.....64

CENSORSHIP NOTICE—Censorship rules occasionally make it necessary to tear out or otherwise delete parts of publications destined to subscribers outside the United States. If there be such deletions in copies of THE OIL WEEKLY going abroad, they are at the request of the Office of Censorship. Copies sent abroad face unavoidable delay because of time necessarily consumed in passing the publication through the Office of Censorship.—*The Publisher.*

Published Every Monday. Single Copies 15 cents (Except Special Issues). Subscription price: domestic and foreign, $2.00 a year; 2 years, $3.00. Advertising rates on application.

Copyright 1943 by The Gulf Publishing Company.



Nursing a Brake Lever *is his Battle Station...*

OURS is giving him better *WIRE ROPE!*

IT'S NOT ALWAYS easy to see the tie-up between keeping an eye on the drill string—and blasting the enemy. But, look at the fronts where oil is fighting and there's nothing remote about it. Yours is a front line industry . . . as necessary in the boiler rooms of carriers as it is for the jeeps and half-tracks.

And our job of keeping you supplied with a tough, easy-to-handle wire rope like "Blue Center" is no less vital. Roebling lines are first choice with outstanding drillers throughout the country, you'll find they resist the loads and shocks of both rotary and cable tool rigs . . . withstand the crushing and abrasion of high speed operation . . . get full capacity from men and equipment through easier handling, fewer shutdowns, more sustained operation.

☆ ☆ ☆

Yes, Roebling "Blue Center" Steel Wire Rope is conserving steel for all America . . . by staying on the job longer . . . by meeting emergency service conditions unfailingly, wherever wire rope has a job to do, for Victory.

DISTRIBUTED BY NATIONAL SUPPLY CO. AND REPUBLIC SUPPLY COMPANY

ROEBLING

"Blue Center"

STEEL WIRE ROPE

PREFORMED OR NON-PREFORMED

GIVE *YOUR* WIRE ROPES A *FIGHTING CHANCE...*

and they will deliver the full length of service that has been built into them. To help you, Roebling has assembled a wealth of conservation data and boiled it down on a 4x5 inch tag that can be fastened right to the equipment. Printed in two colors and varnished to stay clean, it's a convenient way to remind and instruct operating men about such vital precautions as: Proper Installation, Correct Spooling, Proper Use of Clips, Regular Lubrication, Frequent Inspection and Careful Operation. Copies are yours for the asking. Write our nearest office and specify Tag "B".

JOHN A. ROEBLING'S SONS COMPANY

TRENTON 2, NEW JERSEY

Branches and Warehouses in Principal Cities

The Changing Panorama

Mammoth Production Job During 1944

DURING the first two years of war, the American oil industry has solved the stupendous problems of transportation and manufacture of aviation gasoline and synthetic rubber, but is confronted in the third with still another man-sized job—a shortage of crude oil, the industry's raw material. The latter may be the most serious problem of all.

In 1944, the United States is expected to produce 1,700,000,000 barrels of oil. The whole world produced only little more than that in 1942, the combined yield of all countries amounting to slightly less than 2 billion barrels in that year. This assignment represents an increase of 200 million barrels over the 1½ billion barrels, an all-time high, it appears likely to produce in 1943, and compares with a pre-war peak of 1,400,000,000 barrels in 1941.

To meet the problems of transportation and refining, oil, like other industries, was permitted to expand its facilities. New pipe lines and new refineries were constructed on a large scale. Although additional wells are required if the industry is to improve its producing ability, government restrictions have curtailed its drilling development far below pre-war levels. While the 24,000 wells planned by government agencies during 1944 is higher than the 19,000 that will be drilled in 1943, and also are more than the 21,000 wells drilled in 1942, they will be far below pre-war levels of approximately 30,000 wells annually.

Thus, oil is asked to produce 20 percent more in 1944 than its record year of 1941, while its drilling operations are curtailed by 25 percent. No such task has been imposed upon any other industry. Considering that oil is recognized as being as important to the war as planes, shells or food, this situation appears unfair and unwise.

A Dangerous Trend in War Agency Personnel

MANY industrial men who have been occupying key positions in government war agencies are leaving to get back into private business. There has been a noticeable trend of this during the past two months. The feeling seems to be that they have accomplished the tasks for which they went to Washington, and having taken necessary steps to establish policies and practices, bureau affairs will be of a routine character henceforth, and there is no further need for their services.

This trend creates a dangerous situation, especially in those agencies, such as PAW, that have drawn upon industry for its personnel. The shortage of manpower in industry makes it more difficult to obtain replacements from business at this time. Consequently, professional office holders, who could be expected to seek to perpetuate their jobs, even at the sacrifice of industry, are likely to step into the vacated positions. Once such persons get in control it would be difficult to eliminate them at the end of the war, whereas business men could be expected to quickly and wishfully get out.

The desire of business men to get out of Washington and back to their civilian jobs can be understood. Further, many of those who came for stated periods have reached the end of the term for which they agreed to serve. The absence of important executives, engineers and other experts no doubt is being felt by their companies, but wherever possible it is to be hoped that these men will be permitted and encouraged to remain in government service for the duration of the war. Any other course is too dangerous.

Oil Men Should Be Told Foreign Plans

ALTHOUGH Petroleum Administrator Ickes gave much time to a discussion of government attitude toward foreign oil development and to the operations of the Petroleum Reserves Corporation in his speech delivered to the American Petroleum Institute (THE OIL WEEKLY, November 15) at Chicago, his remarks failed to set at rest rumors regarding these two phases. In fact, more rumors probably have been afloat since his speech than before.

Oil men, with rightful concern, want to know if the corporation proposes to use all the broad powers that its charter provides, including those that permit the government to engage in the oil business. Oil men also wonder if the United States government is going to give large financial and other assistance that will permit increased foreign oil development while continuing to curtail its own domestic industry.

Although he has been questioned on these matters on numerous occasions, Ickes has failed to reveal just what the purpose and plan of PRC will be. Neither has the full program for foreign development been detailed. He failed again to present a full and clear statement at Chicago. In fact, he added additional conjecture in his Chicago talk by asserting there is no international arrangement to adequately carry out the principles of the Atlantic Charter so as to guarantee all nations fair access to the world's oil resources, and added "It is hoped that some such agreement will be forthcoming." Oil men also want to know what he meant by these statements.

The United States oil industry should be informed regarding such government plans. It should not be left to conjecture. As long as a clear and full statement is not forthcoming, there will be rumors and suspicions attached to every move PRC makes or contemplates—and the longer such a statement is postponed the more suspicions and rumors will spread. These could tear down the good will that PAW has created for itself, and which has resulted in industry support and cooperation.

Gasoline at Treble Price?

THE Senate recently passed and sent to the House a bill appropriating $30 million for construction of a plant or plants to produce gasoline from coal or other substances. Some pertinent and thought provoking remarks on this bill appeared in the Wall Street Journal as follows:

"Newspaper accounts of the Senate's debate on the bill give the impression that the petroleum industry favored the bill, which was advocated on the floor of the upper chamber as a conservation measure necessitated by the drain which the war has made upon known American oil reserves.

"This newspaper doubts that the oil companies or any of them want to see the government spend a dollar to develop a process which is already fully developed so far as demonstration of feasible method is concerned. The attitude of the oil companies, we surmise, is that they do not themselves care to

engage in the production of gasoline which, on the authority of their refinery experts, would be hopelessly out of competition with oil-produced gasoline, so long as the world has an abundance of crude oil. The testimony of these experts is that when produced on a commercial scale, gasoline made from coal by the best of several processes would cost three times as much as the oil-derived engine fuel.

"The Senate is willing to spend these $30 million—a trifling sum, of course—to foster a product which could not be marketed except under the shelter of a literally prohibitive tariff against foreign oil products and even so only if and when the oil reserves within this country were a great deal nearer exhaustion than they are now. It will be a bit ridiculous if Congress should pass and the President should sign this bill to encourage the production of engine fuel at three times its present cost while OPA and Stabilization Director Vinson refuse to raise the ceiling price of crude oil to foster the discovery of new underground reserves in this country.

"If the government spends $30 million on the capacity to produce a minute fraction of the country's daily gasoline needs, what does it do then? The bill provides that the product of these plants is to be sold through commercial channels. But at what price? And does the government continue this piddling production or does it enlarge its hydrogenation plants to produce more commercially unsaleable gasoline? Or will gasoline be rationed forever and some or all of the coupons in the book be good only for coal-produced gasoline?

"If the bill be considered as a purely war measure, the question arises how long it will take to get, not $30 million worth of plant but ten or twenty times that installation constructed and operating. Could that be done more quickly than new reserves could be discovered under a higher ceiling price for crude oil?

"We submit that the Senate did not know what it was doing when it passed this bill and that the House had better find out."

Mexico Expropriation Deal With Britain?

NOW that an agreement has been made with American companies, there is all sorts of speculative talk going the rounds in Mexico City over the possibility of an agreement being reached for indemnity for the British oil properties affected by the 1938 expropriation. No doubt, a part of the talk is based on the presence in London of Eduardo Villasenor, director general of the Bank of Mexico. Villasenor has announced he is in London to bring about closer relations between the Bank of Mexico and the Bank of England, and to attend to registration of certain Mexican bond issues on which reduction in payment has been agreed to.

However, Mexican oil circles do not place much belief in the possibility of a settlement agreement being reached with the British.

OPA Lets Many Prices Advance

A TABULATION of OPA records reveals that price lifting is running about four to one ahead of price cutting and hold-the-line orders. During the month of September and the first three weeks of October, the agency approved 97 price advances in comparison with 22 price rollbacks and 3 holding orders.

It was at the end of this period that oil was refused permission to increase its prices, Stabilizer Vinson announcing his oil decision October 29.

Most of the commodities receiving higher prices were of such character as not to affect the cost of living index records kept by the Labor Department. Consequently, OPA will not be confronted with having permitted higher living cost. Apparently, OPA officials, if at all possible, are careful not to do anything that might influence this index to swing upward.

Drilling Many "Tax" Wildcats

THE increase in number of wildcat tests being drilled by the industry, which has been quite noticeable in recent months, is to a very large extent being financed by funds which would be absorbed by excess profits taxation if not employed in this way. Quite frankly, they are being drilled with tax money.

In other words, the year's total effort to discover new oil production—deficient though it will be when gauged by PAW's goal for 1943—will represent an outlay for exploration very considerably greater than any amount that could have been justified by present crude prices and other handicapping conditions.

More than one company has recently initiated increased exploration. More than one concern heretofore not interested in the production of oil are wildcatting. This situation surprises many in view of the industry's assertions that higher prices are necessary to encourage exploratory work. Recent increases in wildcat activities can be explained by the fact that many concerns by the end of the third quarter already had netted earnings that placed them in a position where 90 cents of every $1 from then on would go to the government. Faced with this situation, some concerns have more than doubled the rate maintained in the early part of the year.

The industry viewpoint on the subject is that it is being forced to finance in this way operations that would not otherwise be undertaken, and that the increase in operations did not come until near the end of the year, when fairly close estimates of the tax situation could be made while the whole year should have seen such an intensive effort. Unfortunately, this situation has tended to result in the drilling of really risky wildcats.

Not Wildcats But Oil That Counts

OPA points to the current high rate of wildcat drilling as proof of its wisdom in not allowing a price increase, claiming that exploratory drilling on a large scale is taking place regardless of price.

The fallacy of this theory is that no matter how many wells are being drilled, they are not enough unless sufficient oil is found thereby. If the number of wildcat operations were to be tripled, there would still be too few of them if they failed to add new reserves sufficient for the country's needs.

It is the oil found that counts, and not the number of wildcats drilled.

Oil Breaks Into Popular Magazines

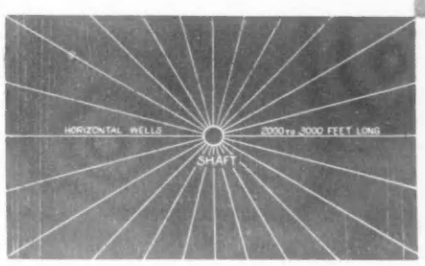
AN increasing number of feature articles on the oil industry have been appearing recently in widely circulated popular type magazines. These have appeared in such magazines as Saturday Evening Post and Colliers, and Fortune shortly will publish two articles on the industry. These articles have discussed the importance of the industry, its wartime accomplishments and also have attempted to discuss some of the problems confronting oil.

These articles reflect the growing interest of the public in the oil situation. On the whole they have been well written and quite favorable to the industry, and they should do the industry much good.

HORIZONTAL WELLS *may revolutionize* SECONDARY RECOVERY

Improved methods used at Pennsylvania installation prove that horizontal holes can be drilled 2000 feet or more from central chamber and their elevation controlled as desired at any point

By C. O. FAIRBANK



THE story of horizontal wells is the story of a man—a man who would never give up—one to whom the oil companies would listen attentively — and then for years remain respectfully inactive. For many years Leo Ranney was the only advocate of horizontal drilling, and the only one who knew how to do it. But now that he has demonstrated his methods for the third time, and has drilled more than 12,000 feet of his oil wells, petroleum engineers believe that horizontal wells may revolutionize secondary recovery, and make commercially available a large part of the 70 billion barrels of oil still known to be in the ground—the petroleum that Donald Knowlton, PAW director of production, calls "engineers' oil."

The Ranney well installation at Franklin, Pennsylvania, has proven that horizontal holes can be drilled 2000 or 3000 feet, or even farther, and, knowing their elevation at any point, they can turn them up or down at will. The first pair of wells in the Franklin installation of the Venango Development Corporation are approximately level with the mouth at 1500 feet, and from there on slant slightly upward. At 2000 feet each well is about 12 inches above the starting point.

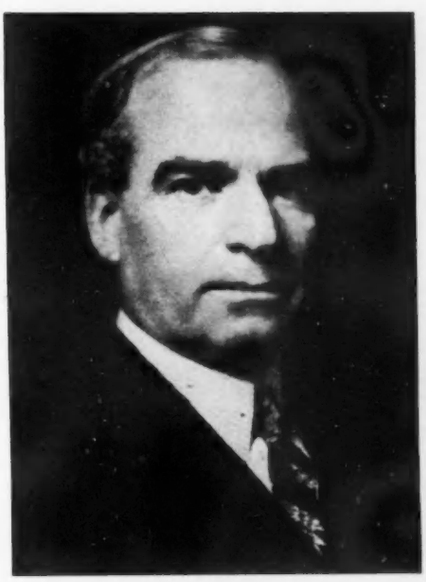
The 8-foot diameter Franklin shaft is 429 feet deep, ending in a 27-foot circular work chamber in the oil sand. From a level one foot above the bottom of the sand stratum to be worked 24 wells are to be drilled, like spokes of a wheel, out to property lines. All wells will flow by gravity to an enclosed tank, and one big pump will lift the fluid to the surface.

Nothing could be simpler or more logical. But the circular, hollow monolith of concrete 429 feet deep, with 12 pipes and 24 portholes cast in the walls, the steel headframe, the steel cage, the hoist, fan, fan house, 75-horsepower air compressor — all machinery electrically driven—are a far cry from the first horizontal well drilled into the outcrop of the First Cow Run Sand on the bank of Havener Run, in Morgan County, Ohio, in 1937. There some visiting engineers and geologists of the industry, who came to see, told the inventor in no uncertain terms that he was visionary, and was just wasting his time.

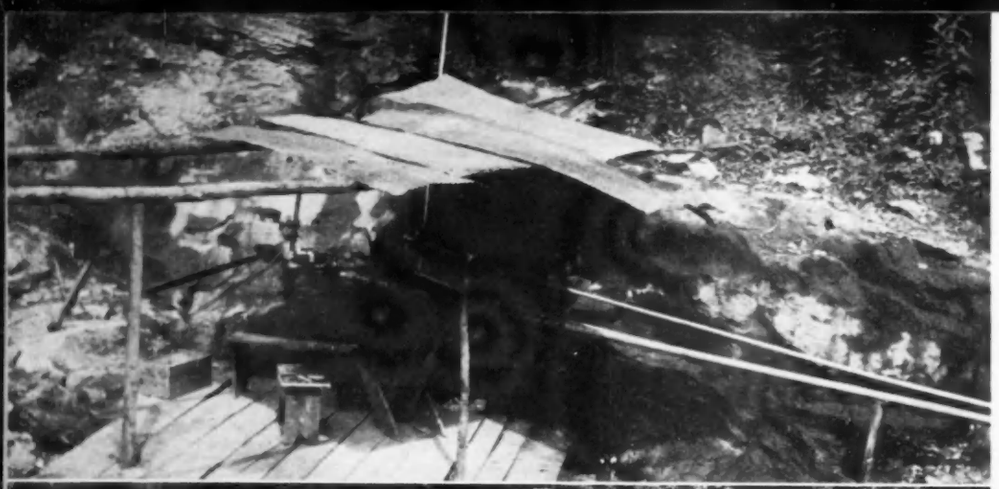
In the minds of these advisors there were two sufficient reasons for their counsel: 1. They opined that neither he nor anybody else could drill more than 200 feet horizontally, since it had never been done; 2. Even if drilled, the well would produce nothing, since the oil saturation was only 15 percent. But the well was drilled to a length of 802 feet, the end being 2 inches above the mouth, and (a branch well was even drilled) was carried to 953 feet, between vertical wells long since abandoned.

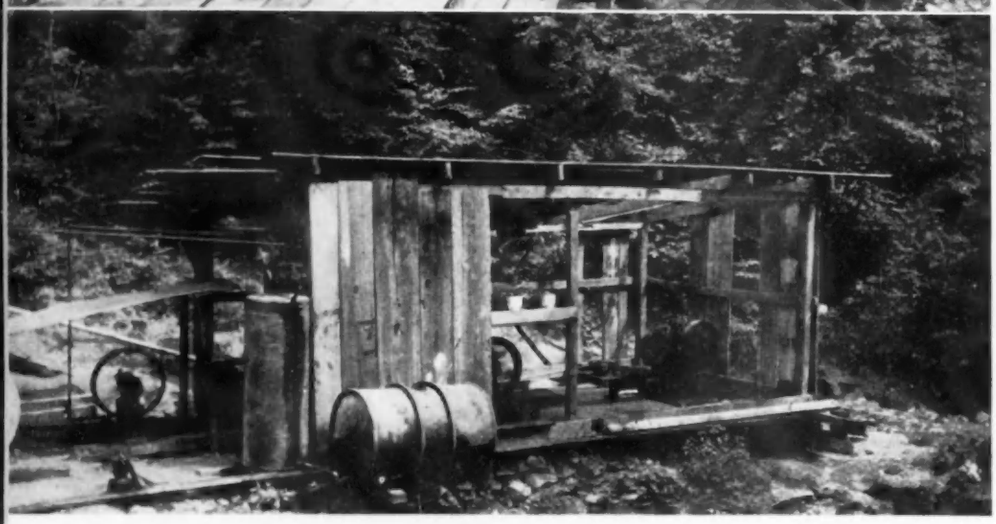
After the well was drilled the same kibitzers dolefully advised that it could not be shot—but, it was successfully shot. That shot made headlines. After blowing for a half hour, the well began flowing a casing full of oil. After 6 weeks it was still delivering 7 barrels daily; and when 2 years had lapsed that foolish well was still pouring out 3 barrels of Pennsylvania Grade every 24 hours.

The second attempt involved a shaft 37 feet deep, 400 feet from the outcrop and 800 feet from the old crop well. There Ranney developed "rod pullers" to shuttle the drill rods out of No. 1 hole, on one side of the shaft, and into No. 2 hole on the opposite side, at the rate of 100 feet per minute. On each end of the drill rod was a 50-foot jointed core barrel and a diamond bit, so when a core was pulled from No. 1 hole, the machine was reversed to cut a like core in No. 2. Drilling was usually at the

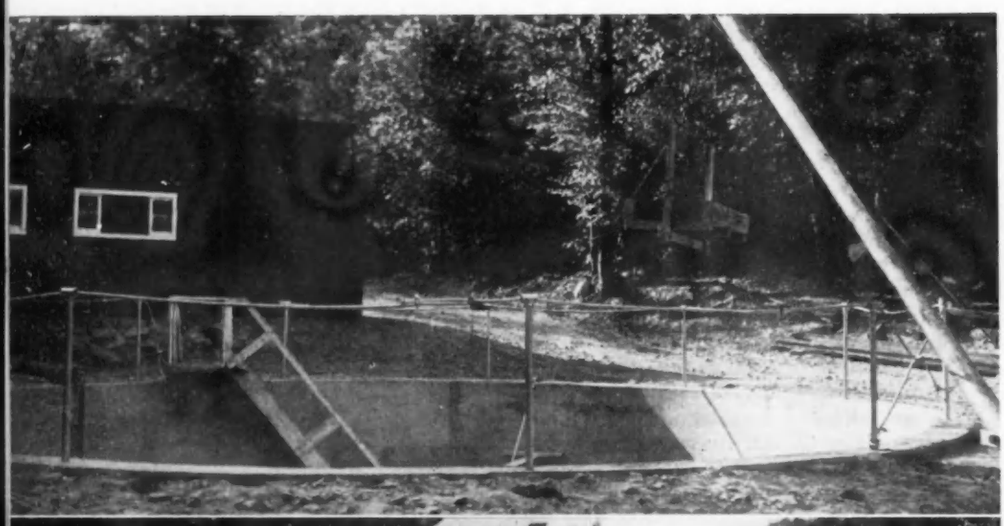


Leo Ranney





The world's first horizontal oil well at Havener Run, Morgan County, Ohio, and its power plant. *Below:* The second horizontal well drilled at Havener Run. This shaft is 37 feet deep, 30 feet in diameter, *and at bottom,* the shaft and power house at Franklin, Pennsylvania. The 8-foot diameter shaft is 429 feet deep.



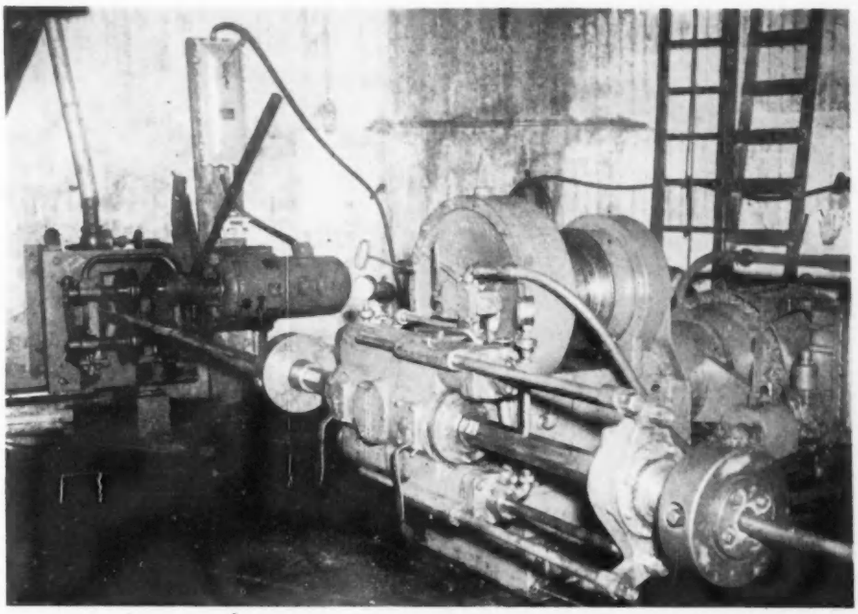
rate of 1 foot per minute, except in the hard streaks. There 6 wells were drilled to property lines. These have paid for their drilling, and are still flowing oil.

Rarely in the past has a new idea, especially a revolutionary one, of an independent inventor been put to practical application without heart-breaking discouragements—and Ranney has not been an exception to the rule. He met difficulties that would have floored the ordinary man — lack of funds, lack of equipment, lack of personnel, failing eyesight, mistakes made and corrected, by which he profited in further development of his idea. During the past 6 years he alone has made more progress in horizontal drilling than the whole oil industry made in vertical drilling in its first 40 years.

Ranney's theory has been that whatever the fluid to be recovered from the earth, the larger and more extensive the exposure of the producing horizon, the greater would be the flow. He had already applied the horizontal well theory to the production of water, first for the Metropolitan Water Board of London, England; then, in 1935, he gave a new water supply to Lisbon, Portugal. The Paris Ranney project, to furnish 1 billion gallons of water daily, had only been started when the French people dropped everything to prepare for the war that they knew was coming. Returning to this country, he began to make installations for industries, cities and war plants. Some 50 shafts have been sunk and more than 50,000 feet of Ranney-wells drilled for the production of potable water — their normal capacity is twice as great as the gallonage of all the world's oil wells. One shaft alone has a normal capacity of 1½ million barrels daily. Life Magazine, November 16, 1942, carried 4 pages of pictures of Ranneywells.

While horizontal water wells are usually in loose sand or gravel, the Franklin oil wells are in a sandstone as hard as a banker's eye—in fact, the First Venango is purported to be the hardest drilling sand in Pennsylvania. The first 100 feet of each well is cased with 3½-inch pipe, grouted in; but the rest of the 3-inch holes are left uncased, clear to the boundaries of the 400-acre tract being worked. On the same level the wells pass through hundreds of changes in sand texture, from solid quartzite to open sand with a permeability of 3000 millidarcys—often within a distance of 10 feet. Now we know why poor wells and dry holes may be drilled in the center of a proven field. The cores of the first 2 wells, almost 5000 feet long, are crossed by more than 2000 bedding planes, at all angles. The industry has presumed that oil sands were somewhat uniform laterally!

It probably seldom occurs to the ver-



The horizontal drilling machine, and one of the two rod-pullers, in action at Franklin. Here the rod-pullers and the "two-at-a-time" method of drilling were developed. Note the suction pipe at the top of the well hole (at left) to pull away any gas encountered.

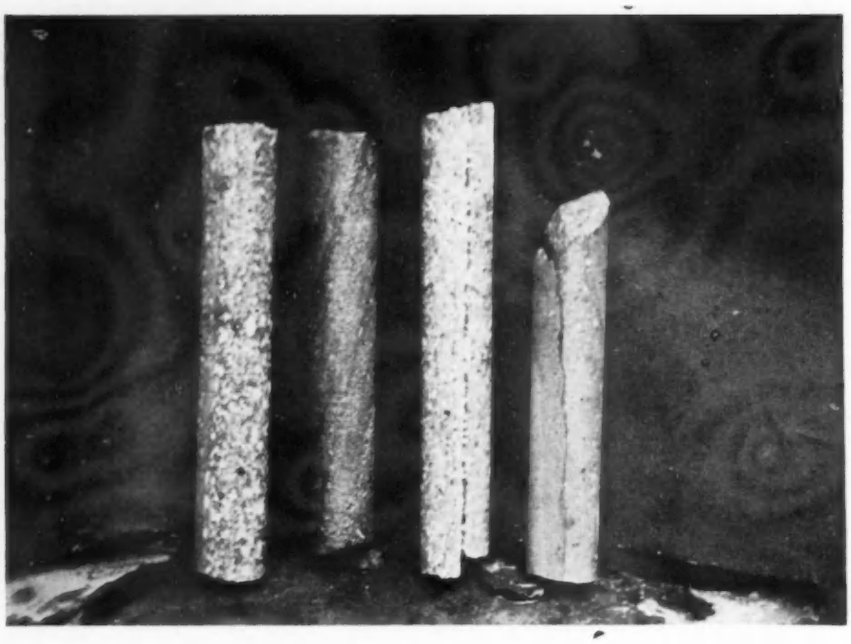
tical-well driller that on the average less than 2 percent of his time is spent in the pay sand—and 98 percent of it is spent in barren and unproductive rock that he must penetrate to reach the sand he is after—the only horizontal of any value whatever. Only 1 week out of a whole year spent in the pay! Since the horizontal driller is always in the oil sand, he accomplishes a year's productive work in 1 week. More than that, he never has to uncouple his drill rods until he has drilled 5000 feet of oil sand! Translated into manpower, that means something in war time—and with labor becoming more and more of a problem, it may be an important consideration when the war is over.

All visitors at Franklin, from engineers to oil company executives, have one question in common—"How are the holes kept level? What keeps gravity from pulling down towards the center of the earth his 7 tons of drill rods and core barrels?" The complete answer to that question would fill a volume. The holes are under constant survey, and should they drop an inch, they are turned up in a few minutes, without the use of whipstocks. The 2 Ranneywells now drilled were lifted many times. At 1500 feet from the shaft they are within 1/16 of 1 degree of level with the mouth; at 2000 feet they are slightly above the starting point, and they are held at this level to the end.

The whole oil industry, the Bureau of Mines and the PAW are awaiting the results of the shooting of these two Franklin wells in the First Venango Sand—considered to be the hardest sand to drill and produce in the whole area, the sand in which both water flooding and repressuring had failed. Advanced negotiations are in progress to operate in other fields—so, when other projects are started, it is quite apparent that the main bottleneck will be trained personnel, since this type of drilling is different from any other. However, green men who will follow instructions (which differ with each type of sand), who understand machinery and who are supercareful can learn the art in a few months. Experienced drillers must forget many things—and this is not always easy. In an hour's time a driller can ruin a $5000 hole by failing to follow procedures laid down.

Though the case has been proven—

A total of 4600 feet of cores taken in a straight line on the same level across the 400-acre lease of Venango Development Corporation at Franklin, Pennsylvania.



Franklin horizontal cores taken within 40 feet of each other and on the same level. Note difference in sand structure and saturation. The light cores contain no oil.

that these wells can be drilled—the big day at Franklin will be the day when DuPont's Bickel presses down the handle that will fire the 14,000 pounds of 80 percent hi-velocity gelatine and TNT that fill the two Ranneywells within 400 feet of the shaft. The 2½-inch sticks are rammed into 8-foot aluminum tubes and pushed into the holes, 40 feet at a time. This will be by many times the biggest and longest shot ever fired in an oil well. From Ranney's Ohio experience, he predicts that the holes will clean themselves, that the wells will be greatly enlarged, that the rock will be broken for about 40 feet on each side of the shot and that cracks will be formed to the top of the sand.

One look will give the petroleum engineer a reason for the present satisfacfactory performance of the wells—before shooting. A 20-foot substratum of sand is being worked, and the sand exposure in these two wells is equal in length to more than 200 vertical wells—even in this sand, even before the wells are shot, one would expect some production from 200 wells. However, the entire exposure of these two holes is only a foot above the bottom of the substratum being worked—an advantage of course unattainable in vertical wells.

Horizontal wells are known not only in this country, Europe and North Africa—they are now being installed for the Commonwealth of Australia, under the personal direction of Ranney. A shaft in the Lakes Entrance Oil Field is now concreted for more than half its 1200-foot depth, in preparation for the horizontal holes to be drilled 4000 feet out into the oil-bearing glauconite. If that productive monocline extends out under the ocean, as some Australian geologists believe, horizontal wells will be drilled from a tunnel driven on top of the glauconite, 1500 feet below the wildest and roughest body of water in the world—the Tasman Sea.

This versatile man's inventions are also being used, under his direction, for the recovery of natural gas (methane, firedamp) from the coal seam underlying the City of Sydney. The gas so recovered is being packed in high-pressure drums and used to drive automobiles and U. S. Army trucks about the city. The octane rating of this fuel, by the way, is 150. Drilling machinery is now being made here to send to Sydney to increase that methane production. Incidentally, some of the coal seams of our West Virginia contain as much as 20 million cubic feet of natural gas per acre, from 80 percent to 90 percent of which probably could be recovered by Ranneywells.

The major problems of horizontal drilling have been solved; the next step is its application to other sands, most of them easier to produce from and easier to drill, and many of them where shooting will not be necessary. But today the eyes of the oil world are riveted on little Two Mile Run in the Venango County that gave birth to the oil industry, in the hope that its rebirth may occur in the same county. And six billion barrels of Pennsylvania Grade oil—companies with $400,000,000 invested in these fields—farmers whose fortunes underlie a million proven acres—all are awaiting the story that will be told when that explosive charge, almost a mile long, jars the foundations of Two Mile Run as they have not been jarred since the Sinclair herd of registered dinosaurs played leapfrog in the early morning.

First horizontal well at Havener Run, flowing after the shot.

First oil produced through a horizontal well at Franklin, Pennsylvania.

Extending Centrifugal Pump Life Through Resizing By Metallizing

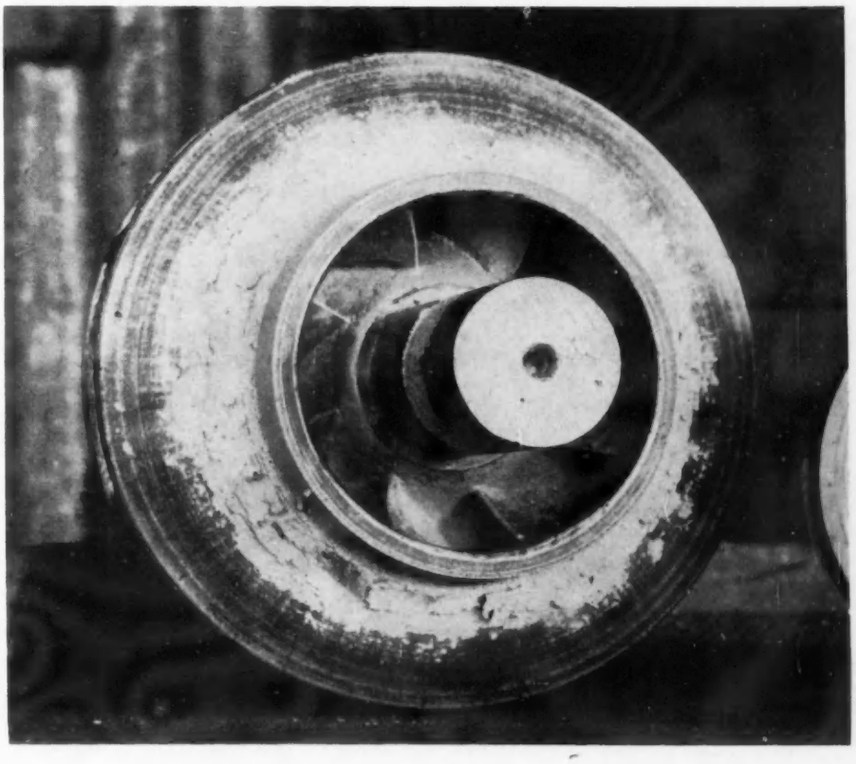
By ELTON STERRETT, Staff Writer

Clearances in centrifugal pumps designed for high-pressure oil throughput are close, with rapid drop in performance as fluid scours away adjacent metal faces. Extra metal, applied through metallizing, enables initial clearances to be restored with but little pumping time lost

INCREASED throughput, lessened supervision, and all too often complete disregard of such accessories as strainers, filters and other equipment designed to relieve the centrifugal pump of the abrasive effect of grit, sand and minute particles of rust all tend to erode the pump parts even more rapidly than during peacetime operation, and thus to send the overloaded pumping equipment to the shop—or scrap pile—long before its useful life is out, or much-needed replacement is available.

On centrifugal pumps, especially of the multi-stage type, a unit may appear to be turning up to full load; check on the electric motor or other drive may show it putting out its usual or calculated horsepower—with only a relatively slight increase in the normal temperature of the pump body to show that it is expending most or all of the power in recirculation. The fluid fails to attain pressure sufficient to move on into the line, being instead forced through the enlarged clearance spaces and again picked up as suction.

The wear in a centrifugal pump which affects the output of the unit is not, except where the unit is handling a fluid in which there is considerable grit or abrasive, located in the impeller or runner, but instead occurs in the clearances between static and rotating portions of the design on the suction side of each stage. This clearance here is between surfaces of relatively much greater diameter than obtained on the other side of the impeller, due to the fact that sufficient port aperture must be left around the shaft to permit the fluid from one stage to enter axially and thus be boosted to the discharge pressure of the next stage. Except in a few designs, the clearance between that portion of the impeller which forms the outer wall of the suction tube and that of the adjoining portion of the pump case is not itself a portion of the case, due to difficulty of manufacture and need for providing a surface of high



The eroded portion of the impeller, after being trued up and a roughing cut taken in the lathe, has been sprayed by metal of the proper analysis until worn surfaces are now out beyond the diameters required when turned or ground to afford the required clearance with the wear-ring enclosing the suction tube end of the casting.

abrasion resistance, whereas the characteristic most desired in the pump body is close-grained resistance against the pressures generated.

A wear- or packing-ring, usually of the same material as are the pump impellers, usually is fitted to a recess within the pump body, with clearance as designed between the inner face of this ring and the closure portion of the impeller body. Of relatively small section, this ring is subjected only to compression in its seat, and must offer only such clearance as is demanded by running characteristics of the pump, as added clearance at that point permits the recirculation of pressured fluid and accelerated wear between the closely placed metal faces.

Examination of typical wearing surfaces of impeller and wear- or pack-ring shows that fluid has eroded both in a curve which affords excessive clearance at both outer edge of ring and opposite surface of the impeller casting. After operation to the point where noticeable drop in throughput is observable, the clearance at the two edges of the presumedly mating pieces of the unit will be found to be four or more times that still observable in the center of the swept area. This wear, in itself a result of fluid flow, tends further to aggravate itself if not hindered, by the scouring action set up by passage of high-pressure liquid through an aperture formed of two curved surfaces, oppositely faced.

Repair of such a pump was, until recently, one of replacement of the worn parts so as to re-establish the desired clearances and enable the unit again to put up designed pressure. With delay in obtaining replacements interposing an ever-increasing factor in unit operation, and the inability of many companies to secure men capable of fitting such replacements into the old pumps, production frequently was seriously disrupted pending overhaul or replacement of the worn pump.

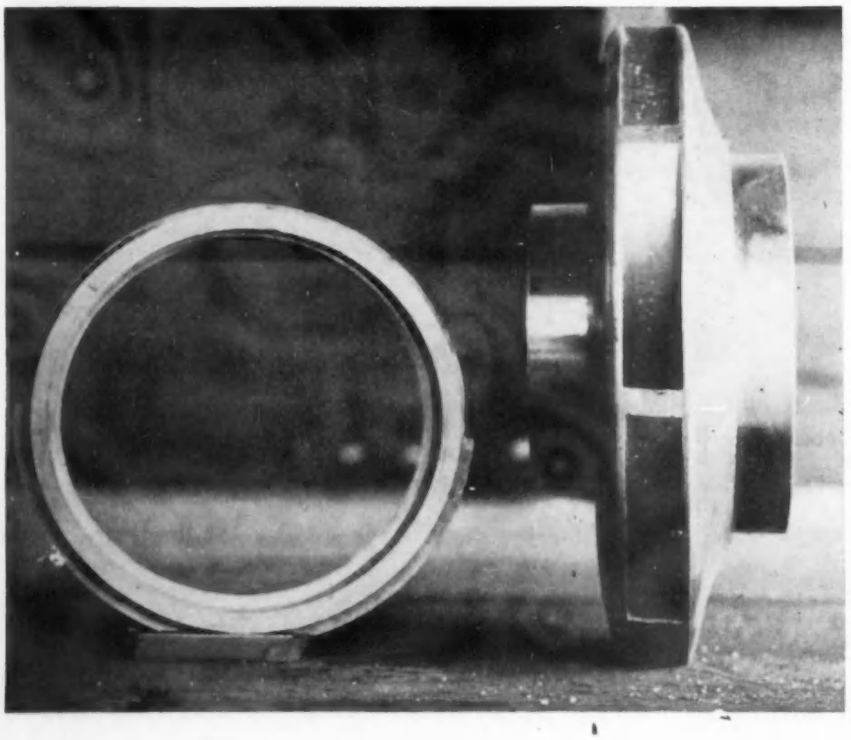
Metallizing of such units, in which the parent metal of the impeller can be reproduced exactly with the sprayed overlay, permits such a pump to be reconditioned with much less loss of production than is now occasioned by the difficulty of obtaining replacement parts. Since the wear-ring is of relatively slight section, but has sufficient metal across the wearing face to permit of reboring for two or more reworkings of the pump, standard practice is to reface the clearance surface of the ring—outer diameter being held tightly within pump case and not subject to erosion—by truing carefully in a lathe and taking light cuts across the sealing face until it has been brought back to original surface specifications, except that the diameter must be greater than originally designed by the amount of metal abraded in service and removed by the tool to recondition properly.

The metal which is taken from within the packing surface of the wear-ring is added to that required to bring the corresponding surface of the impeller back to size. Not only must the metallizer add material to care for adequate turning, grinding or other dressing of the built-up surface to restore original diameters, the work must be extended to the point where the newly finished outer face of the suction tube of the impeller be of the proper diameter to fit with minimum desired clearance tolerance within the expanded wear-ring.

Such rebuilding of the impeller section, especially in cases where the overhaul has been put off so long that the worn surface tends toward the egg-shaped, may require truing the impeller in the lathe and running a roughing cut over the surface to be built-up, it being necessary that the metal applied be sprayed onto a surface which is similar to or parallel with that desired in the finished product. That is, it is poor economy and poorer practice to expect the metallizer to build up points of excessive wear, alternating thick and thin overlays of the sprayed metal. A much better bond can be obtained, metal waste reduced, and the next reconditioning put further into the future, by time and care spent in obtaining a true surface upon which the new metal may be placed.

Where the overlay is of sufficient depth, two or more trips over the surface with the spray gun are found to afford a much more firmly knit surface than the one left by a single pass which attempts to build up a thick coating of new material. Using any of the materials normally found in oil-country centrifugal pumps, the undressed surface left by an evenly applied and thin coating of virgin material will form a satisfactory matrix for a second coat. Bond between two such coatings is ample to withstand the tearing action of the lathe tool when reducing to desired diameter, while the relatively fibrous structure of the new material affords a labyrinth within which is held sufficient lubricant to insure surface safeguarding over the initial run.

The limit to such rebuildings is reached when the wear-ring has been turned out to the point where it no longer has sufficient wall strength to retain its form under operating conditions—replacement of an oversize ring frequently enabling the impeller to be serviced for additional reworkings until or unless the erosive action of the fluid being handled has so altered the internal characteristics of the impeller that it will no longer perform as designed.



This wear-ring, on the left, has been centered in the lathe and the inner or packing face trued up until it will again give proper running clearance when set into the casing to work in conjunction with the newly refinished suction end of the impeller at its right. The other side of the impeller, faced to fit closely within the packing recess of the pump case, has sustained much less wear than the ring of larger diameter opposite it.

Determining Probability of Success Of Secondary Recovery Operations

PART I

Preliminary Field Tests for Determining Required Injection Volumes and Pressure and Plant Capacity

By JO H. CABLE, Consulting Petroleum Engineer, Wichita Falls, Texas

GAS INJECTION: A proposed gas-injection project must necessarily include facilities for the injection of gas or air into the producing horizon. Designing suitable equipment requires a general knowledge of the installed producing facilities and an accurate evaluation of the volumes and pressures necessary for a successful and profitable venture. Preliminary field tests and the assembling of comprehensive data are necessary.

The field tests necessary for the design of a gas-injection project include the determination of reservoir characteristics as they pertain to the amount of displacement necessary for profitable results, the required volumes of injected gas to obtain this displacement, and the availablity of the necessary injection medium.

WATER FLOODING: A preliminary examination of the project may or may not justify the expenditures necessary for a detailed analysis of the probable increase in recovery and the equipment required to complete the installation. If the survey is justified, it is quite important that one or more strategically located wells be cored through the producing horizon.

After theoretical calculations have been made, possibly after a pilot-plant operation has been studied, the project's maximum volumes and pressures have been determined, and analyses of the available water supplies have indicated the proper treating method, then the design of the plant is simple.

The advisability and design of a water-flooding project should be based on a proper analysis of the information acquired in the field and laboratory.

This article is part of a symposium on secondary recovery presented at the annual meeting of the American Petroleum Institute, Division of Production, on November 9, 1943, at Chicago. The symposium consisted of 10 papers. Other papers will be published in future issues.

A PROPOSED gas-injection project must necessarily include facilities for the injection of gas or air into the producing horizon. Designing suitable equipment requires a general knowledge of the installed producing facilities and an accurate evaluation of the volumes and pressures necessary for a successful and profitable venture. Preliminary field tests and the assembling of comprehensive data are necessary.

All available cores, sand chips, or sand cuttings should be obtained for examination. Samples of the produced gas, oil, and water should be collected for analysis. Accurate maps of the property showing the location of all wells (operating, abandoned, and plugged); subsurface structure; tank bateries; pumping units; pumping powers; houses; oil, water, and gas lines; and any unusual topographical features are necessary. A record should be made of casinghead, separator, and gas-system pressures. The availability of makeup gas and fuel should be known. While these data are being collected, it is advisable to examine the installed power units for a determination of whether there is or will be an excess of power which might be used in conjunction with the projected operations. The general condition of all lease equipment, including casing and tubing, should be on record. An examination should be made to determine whether there has been any corrosion; if the use of air is anticipated, this is particularly important; and laboratory tests should determine the reaction of air with the fluids present in the reservoir. The pumping practice, with particular regard to the position of the tubing perforation, will impart valuable information. The possibility of faulty casing seats, deteriorated or leaky oil strings, and replugging of abandoned holes should be considered.

The foregoing information has a decided influence on the type of project, and is a necessary background for the design of the equipment to be used in compressing and distributing the medium for repressuring on an air or gas drive.

Injection Volumes

The amount of gas or air to be handled both in the beginning and during subsequent operations is a factor which must receive considerable attention. It is necessary that a measurement be made of the daily production of gas, oil, and water of each of the wells in the group under consideration, and of all offset wells completed in or exposed to the injection horizon.

The first problem is a determination of the initial injection volume required to get the project under way. If a precedent has been established in the area, it may serve as a guide. Usually 25 to 50 percent of the current gas production is selected as the initial injection volume to be distributed into the producing ho-

rizon. However, if the gas production is negligible, some other method must be used for estimating a proper initial injection volume. Core analyses will assist in determining the void space to be filled. However, if these are not available production records may be used in conjunction with the sand volume to estimate the void space. The initial injection volumes per day can be scheduled so that the void will be filled over a reasonable period of time. The initial volumes per input well in common use vary, some being as low as 300 cubic feet per day and others as high as 2000 cubic feet per day per vertical foot of exposed producing horizon. Such factors as previous experience within the area, difference in well spacing, sand characteristics, and saturation conditions in the reservoir bring about the difference. The amount and rate of increase of injection volumes to a maximum depends on the reaction of oil production stimulated by the gas injected into the individual wells.

The next factor to be considered is the ultimate maximum volume. In gas-injection projects begun relatively early in the life of the field, the required daily injection rate will not ordinarily exceed 50 percent in excess of the aggregate daily produced volume of gas. A more depleted project, where gas production has declined considerably, might require an injection rate as high as the previous maximum gas production. If oil production is or has been restricted or prorated, this factor should be considered. this factor should be considered.

A method of checking the maximum volume required is by estimating the future maximum oil production and multiplying it by the anticipated gasoil ratio at that time; or by estimating the oil production at the economic limit and multiplying it by the anticipated gasoil ratio at that time. Produced gasoil ratios usually increase 100 to 200 cubic feet per barrel annually with controlled injection.

Pertinent to the foregoing calculations is the availability of makeup gas—natural, inert, or manufactured—for the present and for the future. Its volume, pressure, and cost should be obtained and estimated for the future. The possible use of other than lease gas for fuel should be considered.

Required Injection Pressures

After the required volumes have been estimated, it is necessary to determine the maximum pressure required to inject these volumes into the pay horizon in order to design adequate compressor and auxiliary equipment.

Bottom-hole pressure should be measured in the probable input wells, and in enough other wells to determine the maximum reservoir pressure. Sufficient shut-in time should be allowed to obtain maximum reservoir pressures. If the permeability of the formation is exceptionally low, it may be advisable to plot build-up-pressure-vs.-time curves on several wells.

A convenient method of obtaining pressures is to check fluid levels and casinghead pressures after a well has reached equilibrium.

The pressure required for injection usually runs 10 to 25 percent higher than the botom-hole pressure, although in exceptionally tight formations it might be as much as 100 percent higher. Inasmuch as the high pressure is mainly due to friction in the sand, it will be in proportion to the injection volume—and higher proportionally with lower permeabilities. Exceptionally high injection pressures may be due to the Jamin effect where fluid is present and the injection of gas is irregular, or to clogging of the sand pores. In deep projects the weight of the column of gas materially will reduce the required pressure at the surface of the ground.

The use of a test plant to obtain injection pressures is most satisfactory, but not always necessary. In some sands where conditions are uncertain, trial injection with various volumes is the only sure way of determining required pressures. Packers may be set on tubing to segregate less permeable sections of the producing horizon and determine maximum pressures. Care must be used to have the hole pumped clear of fluid, or patience must be exercised to allow the test to continue for a period long enough at a given injection volume to be sure the fluid has been excluded from the bore hole. A recording pressure gage on the injection well during the test is advantageous in arriving at the proper conclusion, and should be used at various and maximum injection rates. It will indicate the clearing of the fluid from the bore hole, or what is known as the "pressure breakdown," and will show actual pressure required. Backflowing the trial injection well for a few minutes will sometimes clean the sand face and decrease the indicated required pressure. In high-pressure injections the dew point should be controlled to prevent the formation of hydrates and consequent stoppages.

After the approximate required pressure for an initial injection has been determined, it is necessary to decide whether an endeavor should be made to increase the botom-hole pressure. Generally, during subsequent operations of the project, an overall formation-pressure decline will occur; but, inasmuch as increasing volumes will be required, subsequent injection pressures will decline slowly. Therefore, the indicated initial maximum pressure is usually adequate throughout the life of the project.

In some projects it has been found feasible to flow the production as a result of a bottom-hole-pressure increase.

Increased production rates are mainly achieved by the volume injected; however, viscosity and surface tension of the crude oil and differential-pressure effects are improved with higher pressures. Pressures necessary at the surface are a function of the required volumes; they are a reflection of reservoir conditions and a guide for the operation. The difference in required pressures for wet gas, dry gas, or air is very slight.

Plant Capacity

After the required volumes and pressures have been determined, the design of a compressor plant can follow. The compressor and auxiliary equipment should have a capacity equivalent to the maximum volume of gas or air to be handled during the life of the project, as well as a pressure range from the minimum probable lease operating pressure to maximum injection pressure with sufficient stages of compression to operate efficiently, economically, and with flexibility. It is frequently advisable to use more than one compressor unit, especially in air-gas injection projects, so that explosive mixtures are not compressed.

Conclusion

The field tests necessary for the design of a gas-injection project include the determination of reservoir characteristics as they pertain to the amount of displacement necessary for profitable results, the required volumes of injected gas to obtain this displacement, and the availability of the necessary injection medium.

Water Flooding

A preliminary examination of the project may or may not justify the expenditures necessary for a detailed analysis of the probable increase in recovery and the equipment required to complete the installation. If the survey is justified, it is quite important that one *or more* strategically located wells be cored through the producing horizon. The coring operation should be supervised closely to make certain that all information obtained pertaining to methods, depths, and conditions is reported accurately. Proper selection of uncontaminated cores or chips, of all sections of the producing horizon, for the necessary laboratory analysis is important, and should be supervised with care. Because the results obtained from these analyses govern the design and development of the entire project, their significance and interpretation cannot be overemphasized. All available laboratory methods must be used intelligently

one Turn...

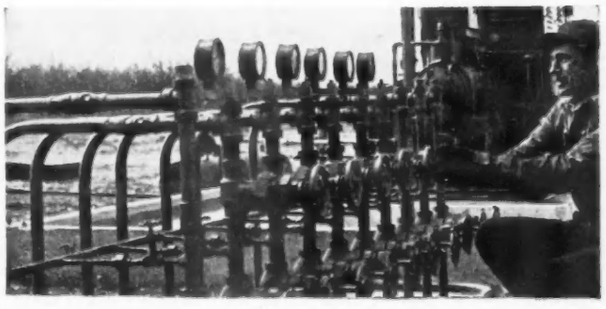
AND RUDE NO. 16 IS UP 100 BARRELS

A twist of the wrist can easily double the speed of a Kobe pump regardless of whether the pump is 1,500 feet below you or 15,000 feet away—and every well on a Kobe equipped lease can be controlled simply from one central operating plant.

Kobe "fluid power" is crude oil under pressure, which is piped to a small powerful engine directly attached to a pump and located down in the well where you want the pumping done. The more fluid you feed this engine, the faster it will go. Increasing the speed of a Kobe pump is as simple as turning on the faucet at home—for the wider you open the well's control valve, the faster your Kobe pump will run.

The simple control and great flexibility of hydraulic down hole operation is rapidly revolutionizing oil well pumping. More and more wells—whether shallow or deep, large or small—are being equipped with Kobe pumping.

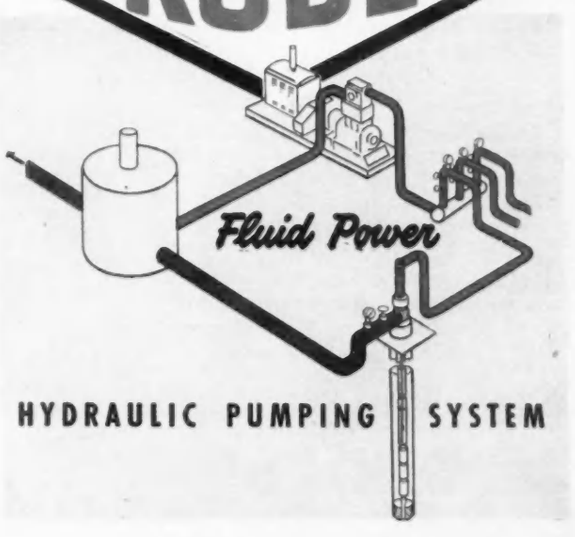
Call or write your nearest Kobe representative and find out why hydraulics offer the pumping equipment progress of the future.



KOBE, Incorporated

General Offices & Plant: 3040 East Slauson Ave., Huntington Park, Calif. • Mid-Continent Division Offices and Shops: 230 S. E. 29th St., Oklahoma City, Okla. • California Sales Representative: 3040 East Slauson Ave., Huntington Park, Calif. • Export Agent: Petroleum Machinery Corporation, 30 Rockefeller Plaza, New York, N. Y.

PUMP THE MODERN WAY...USE KOBE



to design the projected water flood. Flood pots and similar laboratory equipment for confirming recoverable-oil calculations should be utilized.

If preliminary coring justifies the development of the project, and if there are wells still producing, each well should be tested for oil, water, and gas, and samples of this production gathered for laboratory analysis. As detailed a history of the field as is available should be recorded. An accidental flood will greatly influence future recovery and the development program; the extent of its encroachment should be determined before the pattern of drilling is decided.

Accurate maps showing the location of all wells; abandoned holes; subsurface structures; tank batteries; pumping units; powers; houses; oil, water, and gas lines; and any unusual topographical features, should be made.

A survey of all available surface subterranean water sources will determine if an adequate and reliable supply can be made available for the duration of the project. Samples of each prospective source of flooding medium, including produced water, should be collected for analysis. These source waters and various combinations of them should be tested in the laboratory to determine proper treatment for continuous injection.

A study of the surface equipment to determine whether there is any excess horsepower which might be used in the project is valuable. An inspection of the producing equipment such as jacks, powers, and pumps should determine their condition and capacity, particularly with relation to the anticipated volume of oil and water to be handled in the future. The condition of the lease equipment is important, particularly underground equipment, because casing seats or weak oil strings might necessitate the drilling of new injection and production wells if the present wells cannot be restored to usable condition. The advisability and cost of shooting and cleanout work should be estimated. A careful study should be made of the history of all wells which have been abandoned; and, if these have been plugged, it is quite possible that it may be necessary to rework or replug them. Data on the present and future availability and cost of fuel should be collected.

The laboratory data and the collected field information make possible a theoretical calculation of the injection-water volumes required and the pressure and plant capacity needed.

Injection Volumes

Experience in water flooding has shown that the best results have been obtained with injection volumes of from 2 barrels to 5 barrels of water daily per vertical foot of exposed producing horizon in the injection well. This is an average volume figure, and may be modified by such factors as the area served by the injection well, the void space to be filled, and the actual performance of the project. Water should be applied to the sand uniformly over the entire area of the project according to the reservoir conditions in the underlying acre-feet of producing horizon. The indicated volumes required to accomplish this are determined from the core or chip analysis. Experience has shown also that, over the life of the water flood, the total input water volume will probably vary between 5 and 20 barrels per barrel of oil produced. An average figure is 10 barrels of water per barrel of oil produced.

Required Injection Pressure

Increased production rates in water flooding are a function of both the pressure and the volumes injected. The pressure required is a function of the frictional resistance of the sand (therefore, a function of the rate of injection), and of the degree of penetration of the pores of the sand and the extent of displacement of oil and connate water by flooding water. Although much of the frictional resistance is encountered in the immediate vicinity of the bore hole, nevertheless the overall resistance is important. There is both field and laboratory evidence to indicate, if not to substantiate, that the higher the pressure developed in the producing formation, the more complete is the flooding out of all pores and the greater the recovery of oil. This effect is due, in part, to the variation in threshold pressure with bore diameter. Consequently, pressures required for injection at constant rate increase as the void space is filled. Following filling of the voids, the pressure required per unit volume of water injected should remain substantially constant under constant conditions of back pressure at the wall. In creasing pressure-volume ratios indicates plugging either at the input well or in the producing wells.

Abnormally high pressures may result from a stoppage of the pores in the immediate vicinity of the bore hole caused by an accumulation of foreign materials or uncommon geological conditions. Such a condition may be improved by a treatment with mud acid or by shooting, resulting in a normal injection pressure. Selective shooting of the sand sections having different permeabilities will be conducive to uniform injection rates into the entire section and a more uniform well.

The laboratory analyses of core samples from truly representative sections, together with the well-spacing and flooding pattern adopted, will indicate the necessary pressures required for proper volumetric displacement. Verification tests of these calculations by the operation of a single 5-spot or pilot-plant injection is valuable. The water for this pilot-plant operation should be treated and filtered as laboratory data indicate. The results are indicative of the performance to be expected from the entire project.

If the contemplated project is producing oil, bottom-hole pressures may indicate the minimum pressure required for injection. Experience has shown that the maximum water-flooding pressure applied at the surface should be less than 2 pounds per foot of depth less the equivalent of hydrostatic head. Excess pressure should be avoided because a lifting of the overburden may occur, and the flooding medium may migrate along the shale breaks and possibly other bedding planes with little effect upon the saturated sections of sand. An actual loss of oil due to dispersal into other horizons, or even seepage to the surface, can occur if the overburden is lifted.

Plant Capacity

After theoretical calculations have been made, possibly after a pilot-plant operation has been studied, the project's maximum volumes and pressures determined, and analyses of the available water supplies have indicated the proper treating method, then the design of the plant is relatively simple. Occasionally there is enough information available to design a plant unit which adequately will serve the project; however, if the conditions are such that further development might be anticipated, provisions in plant design should be made for additional water-treating or pumping units to increase the capacity and to facilitate flexibility of plant operation.

Conclusion

The advisability and design of a water-flooding project should be based on a proper analysis of the information acquired in the field and laboratory. These data constitute the basis for decisions to be made regarding the development of the entire project and, therefore, must be obtained wtih full understanding of the importance of their reliability. The results from the laboratory study will be used in a determination of the probable oil recovery, the void space, the required volumes and pressures to inject the flooding medium, the water-treating method necessary, and the advisability of the investment.

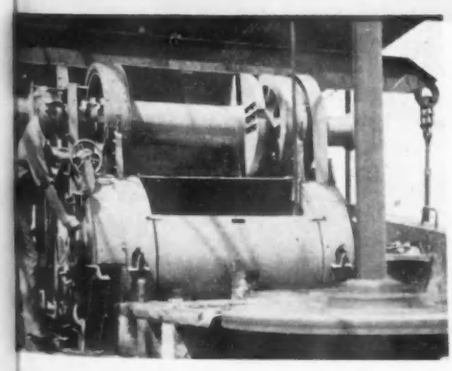
DESIGNED TO PAY *for itself!*

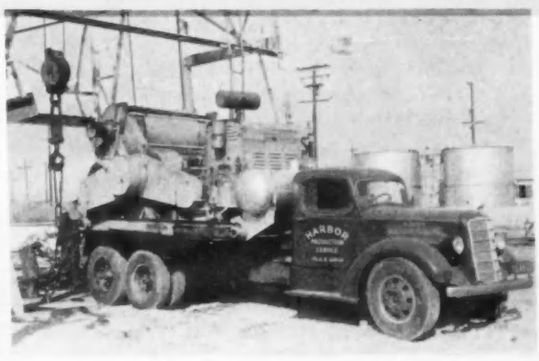
The earning capacity of a "Cardwell" combination drilling rig is greater than that of the ordinary rig because the "Cardwell" is designed to do any kind of drilling or servicing job. Rotary or cable tool drilling and workover jobs can be handled with this rig by installing the rotary or spudder assemblies. Either can be installed in three to four hours in the field.

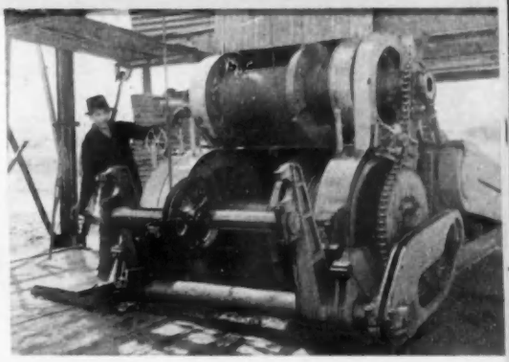
There are three other ways you can find additional income from a "Cardwell": First, savings in hauling costs and rig-up time; second, extremely low maintenance costs; third, greater resale value.

Three sizes of combination drilling rigs are available for rotary drilling with 4½" drill pipe to 5,000 feet and workover jobs to 10,000 feet, or cable tool drilling and workover jobs to 7,500 feet.

ROTARY DRILLING **MOVED COMPLETE ON ONE TRUCK** **CABLE TOOL DRILLING**







ALLSTEEL CARDWELL

THIS TRADE MARK INSURES HIGHEST QUALITY AT LOWEST PRICE

CARDWELL MFG. CO. INC.

FORMERLY ALLSTEEL PRODUCTS MFG. CO.

P. O. Drawer 2001 - Cable Addresses "ALLSTEEL", WICHITA - "CARDSTEEL", NEW YORK

Wichita, Kansas, U. S. A.

"CARDWELL" RIGS ARE STRONGER, WEAR LONGER AND WEIGH LESS

Use of Fluorescent Surface Surveys And Subsurface Logs To Find Oil

New instruments are said to refine fluorography until fluorescence 300 times less than human eye can see can be recorded and hydrocarbon density of less than one part per billion can be measured

By TOM L. TURNER, Staff Writer

ONE of the principal needs of the petroleum industry is newer and more efficient exploratory methods. These methods must of necessity require very little manpower, hold costs to a minimum and be more exacting than any of the previously used methods of oil exploration. To that end, is now offered to the industry the science known as "fluorography," which is a new application of the theory of soil analysis, that has been refined and made more exacting. It is based entirely on the theory of molecular proportions and the escape of hydrocarbons from the anomalous concentrations of the permeable and impermeable geological strata.

The phenomenon of fluorescence has long been known to science and is based on the fact that most substances, when exposed to the action of some specific band of the known electro magnetic vibrations will emit energy of a different quality and/or intensity than the irradiating energy. Such emissions may or may not fall within the visible portions of the spectrum, depending on the range of the irradiating energy. There usually is an optimum band of irradiation under which the specific substances produce maximum emission.

Frequently this emission, although falling within the visible portion of the spectrum may be of such low intensity that it cannot be observed visually but can be detected mechanically with instruments of high sensitivity. For this purpose a highly sensitive instrument, known as a "Fluorograph," has been devised. It is capable of detecting and accurately measuring concentrations as low as one part in a billion. Since all hydrocarbon compounds are strongly fluorescent, it is an easy matter for a trained operator to detect their presence and concentration in soil samples with this instrument.

This patented method of oil exploration offers to the industry two services. One service is the making of fluorographic surface structural maps from soil analysis and the other service is the making of "Fluorologs" which are well logs made from the analysis of well cuttings.

The operators of this service claim that by measuring the amount of fixed hydrocarbons in the colloidal portions of the surface soil or subsurface well cuttings that productive areas can be determined, showing faults and other subsurface data, and that by the same method, except by using well cuttings, that a log of a well being drilled can determine whether it will be productive or non-productive at depths below the bit.

The first step in the fluorographic analysis of an area is the collection of samples. Where a surface survey is to be made, a trained crew lays off the area in the form of a grid. After the area has been coordinated, soil samples are collected, preferably at a depth of 4 feet. This depth assures a true sample and not a sample of surface material that has moved or shifted. These samples are placed in a paper sack, can or any container. It is not necessary to seal them as they do not lose their hydrocarbon content. They are then shipped to the laboratory for analysis. Upon being received at the laboratory the samples are dried, crushed, and demineralized and the remaining matter which contains the fixed hydrocarbons is placed in trays for analysis by the fluorograph. Only 55/100 of a gram is used for each sample submitted to the fluorograph and only 2/100 of a gram is necessary, therefore in the field it is only necessary to collect one ounce of the surface sample. It is possible to analyze 100 samples at a time, thus speeding the process and reducing the cost. To eliminate human error, and to take advantage of the dependable criteria for determination of hydrocarbons, a photographic medium is used. This highly sensitive film, after being exposed to the fluorescence of the hydrocarbons, is developed and placed in a densitometer where the density and intensity is measured. The fluorograph used, can record fluorescence 300 times less than the human eye can see and the densitometer can measure the density to .002.

After the samples have been through the fluorograph and the densitometer they are recorded on a chart as to their positive or negative values. These values are then transferred to the map of the area being surveyed in their proper position on the grid.

Referring to Figure 1, it can be seen how these positive and negative values are transferred to the map and the productive areas outlined. In this particular map two wells had been drilled previously. With the information available from these wells the operator of the fluorograph could plat a subsurface map that combined the fluorography and geology as in Figure 2. In Figure 1 the fluorographer has shown two separate and distinct faults, these two faults are shown on Figure 2 which is a composite of the fluorography and geology. At the top of Figure 2 is shown the positive and negative values of the soil analysis as from Figure 1. In the well log at the left of Figure 2 the positive values on the surface indicate the fault as found to be in the well log as shown.

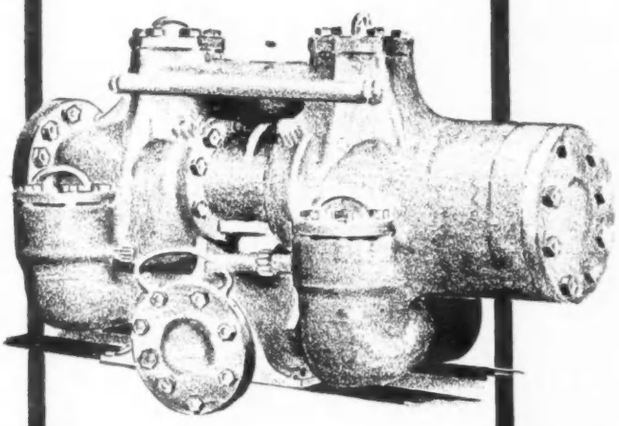
Figure 3 shows three wells on which fluorologs were kept. One is a productive well, one is a fault-cut well and one is a dry hole. These three wells are typical of the wells drilled. A potentially productive well will show a compo-average hydrocarbon curve that is 50 to 100 percent positive from the surface to the producing horizon. As long as the curve continues within this range in a drilling well, commercial accumulation is indicated at some point ahead of the drill. The average value for positive composite samples will be above .15, including both permeable and impermeable strata. A composite sample covering a range in which highly permeable strata occur that shows a value of .75 or over, indicates the presence of a commercially productive sand within the range covered by such sample.

The well in Figure 3 which cuts a fault showed positive at the start, but at the fault break the change was to negative and did not again return to

...repair that Slush Pump

RIGHT IN THE FIELD

SLUSH PUMP SPECIALISTS



A GUARANTEED REPAIR JOB— ...BY EXPERTS

- ★ Sand-cut or washed-out fluid ends and broken cylinders reclaimed.
- ★ Repairing of engine frames or other heavy castings in oil field use.
- ★ Exchange service on oil well tools and equipment.
- ★ Reconditioning slush pump liners.
- ★ Reconditioning plug and gate valves.

HOUSTON

• *We do not use false seats or rings!*

SLUSH PUMP REPAIR COMPANY, INC.

BEAUMONT, TEXAS
Phone R35—F11

Box 2112
HOUSTON 1, TEXAS
2112 Quitman
Phone C. 9828

HOUMA, LA.
Phone 923

positive except in two very short distances and only to a small degree.

The non-productive well in Figure 3 started negative and indicated dry until abandoned except in short instances where the reading was positive, never sufficient to indicate petroleum. If the compo-average curve starts negative at the surface and continues to 500 feet or more, it is not likely that the well will encounter production at any depth.

If a well that has been running 50

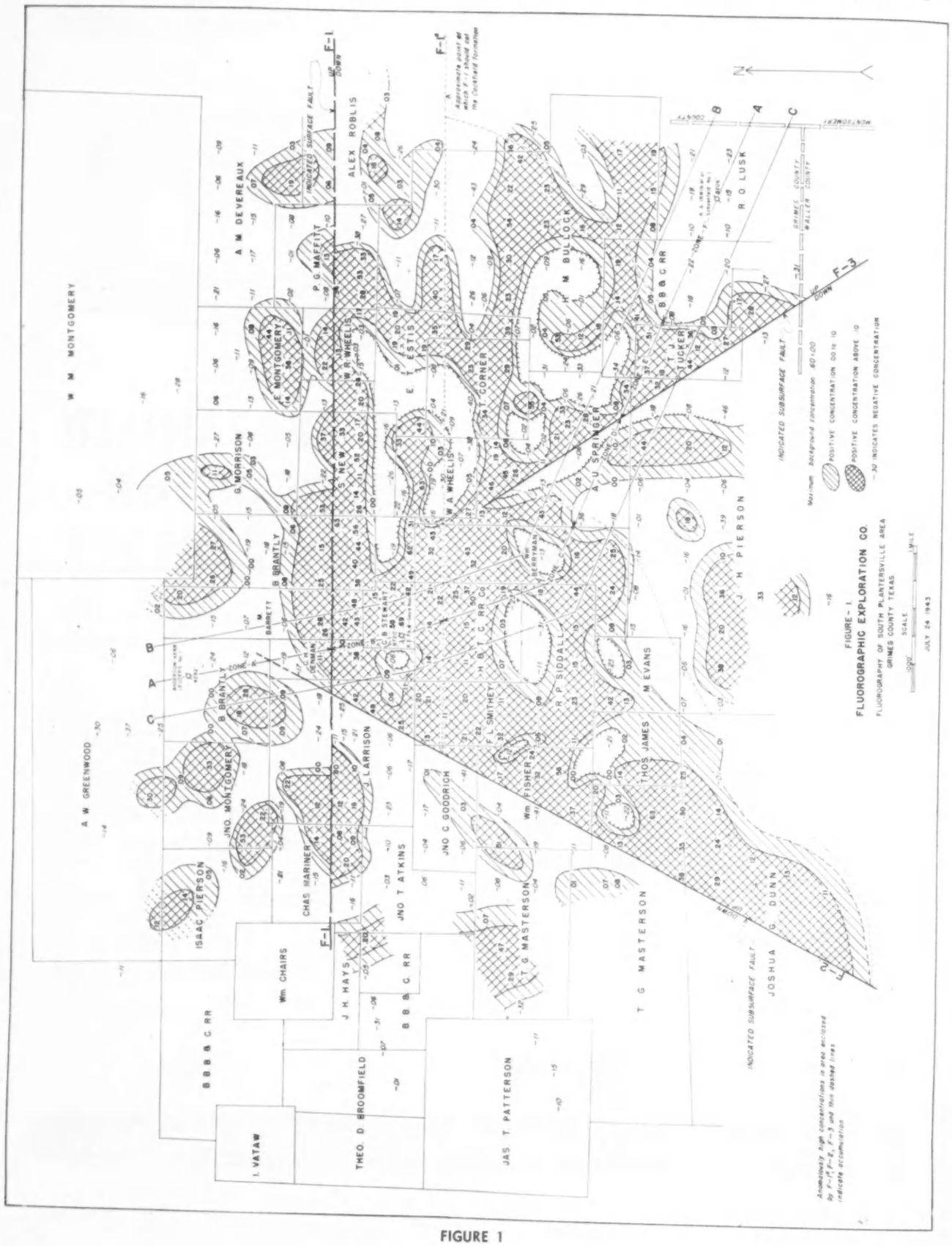


FIGURE 1

percent or more positive, the compo- average drops abruptly to negative and remains negative for a distance of 500 feet or more, it would indicate that the well had cut a fault and no commercial oil or gas is likely to be found at any depth beyond that point. This condition seldom, if ever, occurs except where the accumulation is on the downstream side of the fault cut by the well. This example is shown in the faulted well of Figure 3.

If the highly permeable strata encountered in a well show positive concentration and the impermeable show negative, the presence of an oil or gas deposit is indicated somewhere in the general area. The intensity of the hydrocarbon concentration in the permeable strata affords a slight clue as to the distance the deposit may be from the well being drilled. An average value below .15 may indicate the deposit to be several miles away. A composite sample covering a range in which the highly permeable strata occur that shows a value of .40 or slightly over, may indicate lateral accumulation in that particular horizon, within a comparatively short distance from the well in which it occurs.

In comparatively rare instances an exception may be encountered. The well may start with a negative curve at the surface and continue to a considerable depth and then abruptly rise to a high value which extends to the producing horizon. This can occur where the accumulation is on the upthrow side of a fault and in an area containing a complicated fault system in which more than one fault plane is inclined above the accumulation. Some one of these fault planes may be highly permeable and contain some mobile substance such as circulating ground waters moving at a rapid rate.

The most extensive hydrocarbon leakage will occur at the point where the fault cuts the producing sand. The tendency of the escaping molecule is to rise vertically from the point of escape to the surface—it will not be appreciably deflected by anything other than the mobile substance, such as circulating ground water.

Fluorography with its claimed ability to directly detect the presence or ab-

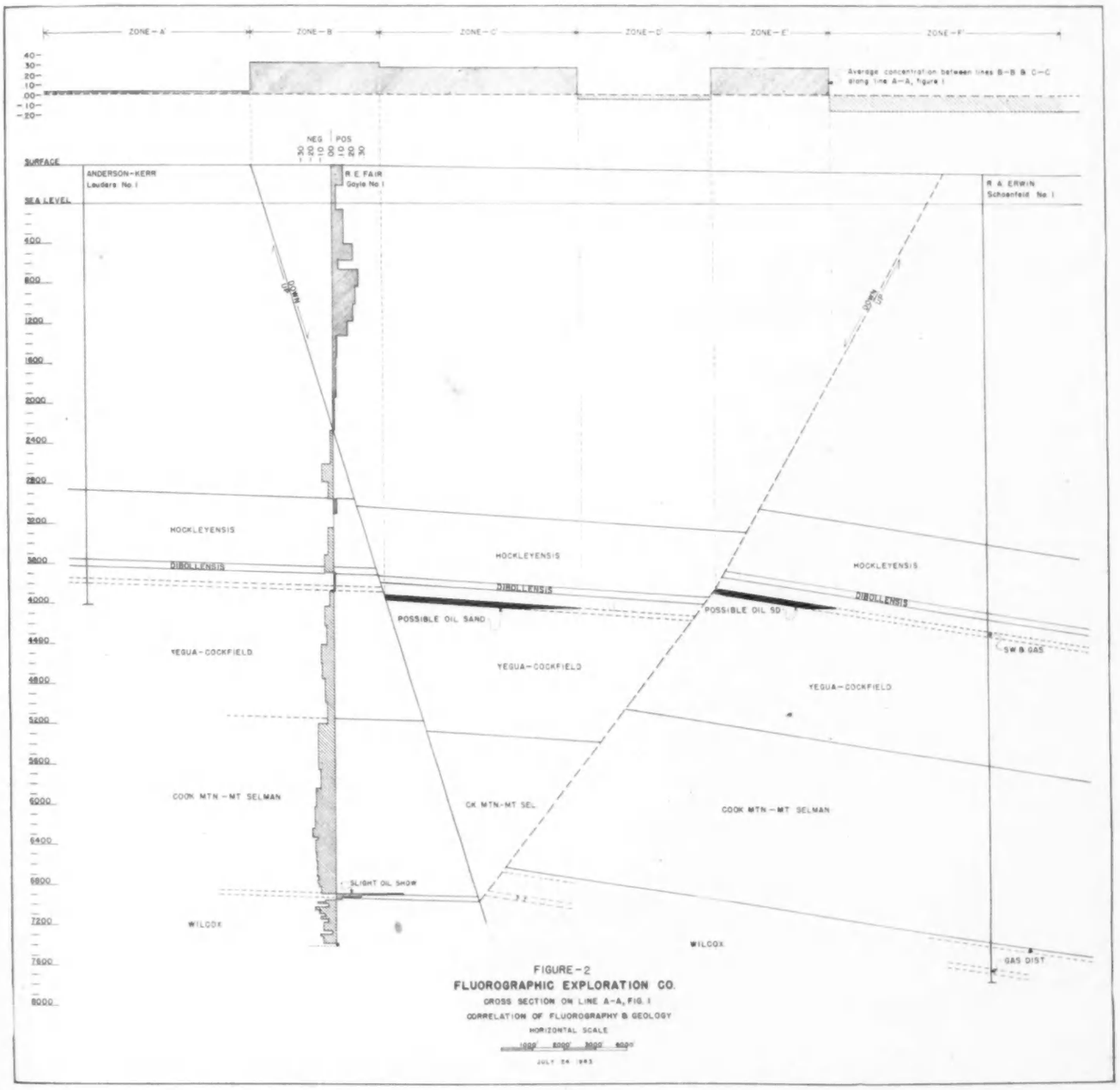


FIGURE 2

sence of an oil deposit should, when coordinated with all other available data, appreciably reduce the number of unsuccessful wildcats.

Fluorologs costs average approximately $0.03 per foot if the samples are delivered to the laboratory. Fluorographic Field surveys are $3.50 for each sample and $1.00 for each sample taken by the field crews. These prices are not accurate but hold good for estimating.

Due to the economy of fluorography a thorough detailed survey, which is necessary for the accurate application of fluorography, can be made at small expense to the operator, thereby assuring data otherwise unobtainable by any present methods.

In generalized exploratory work involving large areas, fluorography provides an economical and rapid method for reconnaissance surveys. Highly mineralized areas are prominently indicated and numerous geological features will be in evidence, both surface and subsurface. Specific outstanding areas may then be selected for detailing.

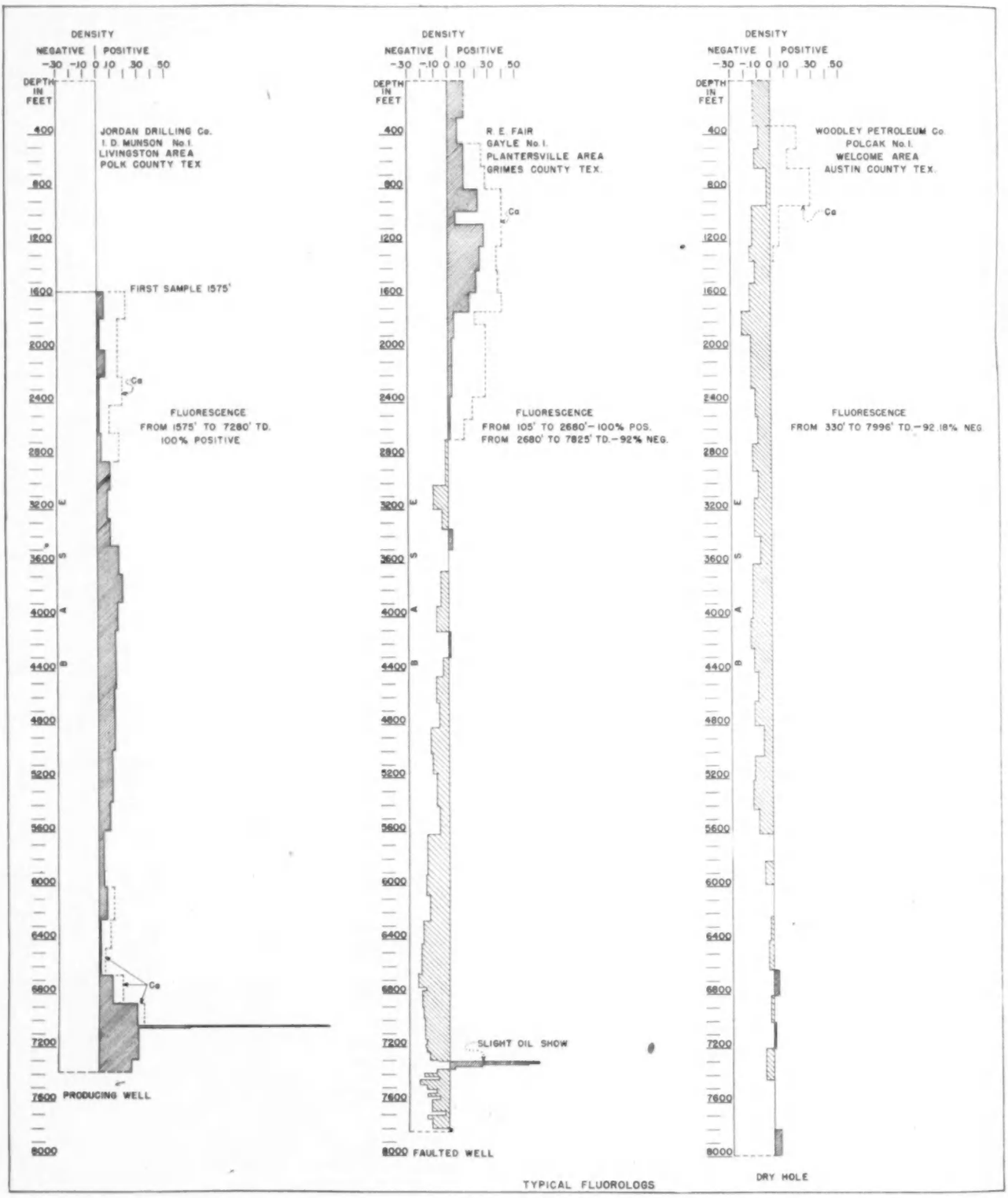


FIGURE 3

5 zones SHOT AND TESTED IN 24 HOURS with a McCullough Gun Tester

This is a record of actual performance—and is typical of the time- and money-saving results you can get through the use of the combination McCullough Gun Perforator and Production Tester and the service of experienced McCullough field men.

Perforating and testing of each zone was accomplished *with a single run of the tubing.* Utilization of careful pipe measurements assured location of the perforations in the EXACT ZONE DESIGNATED. A highly accurate gauge of the productiveness of the zones was obtained because they were *tested immediately after perforating,* while under formation pressure only and uncontaminated by the well fluid. Zones were tested in succession, working downward, and no plugs or squeeze jobs were required between tests.

Get complete information from the nearest McCullough Service Branch, or look up this result-getting McCullough Gun Tester in your Composite Catalog.

McCULLOUGH TOOL COMPANY

5820 South Alameda Street, Los Angeles, California

16 SERVICE LOCATIONS

HOUSTON, TEXAS
CORPUS CHRISTI, TEXAS
WICHITA FALLS, TEXAS
VICTORIA, TEXAS

GEO. WEST, TEXAS
TYLER, TEXAS
SHREVEPORT, LA.
HOUMA, LA.

LAKE CHARLES, LA.
OKLAHOMA CITY, OKLA.
SEMINOLE, OKLA.
CASPER, WYOMING

LOS ANGELES, CALIF.
BAKERSFIELD, CALIF.
VENTURA, CALIF.
AVENAL, CALIF.

Field Reconditioning of Milling Cutters Speeds Side-Tracking Jobs

By ELTON STERRETT, Staff Writer

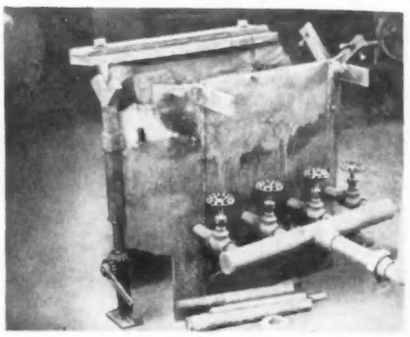
With shortage of alloy steels preventing accumulation of stocks of special milling cutters for side-tracking, cutting through collapsed strings, and other hole reconditioning, recently developed field repair method can minimize lost time

ALLOY steel used in the manufacture of milling cutters ranks at the top of materials for which there are a dozen war demands for every pound produced, and former stocks of cutters used in side-tracking, cutting through collapsed pipe, milling out junk and other occasionally necessary jobs around the drilling well have been pared to a minimum, with the tools remaining being reconditioned to extend their life to the utmost.

Since there no longer is a wide selection of mills for the emergency demand, operators have worked out a field-repair method which approximates the results obtained in the shop, and which eliminates the round-trip time required if the equipment must be sent back to the manufacturer for rebuilding.

The alloy-steel cutters are almost without exception heat-treated to normalize stresses after working; the field technique involving preheating before and during the reforming operations. The worn cutters, after inspection to determine the possibility of deep fractures which might result in a second fishing job if undetected and the tool used again, are heated in a specially designed gas-fired furnace and the hard-facing metal applied while the body of the tool is at the proper temperature for best working. The furnace is in the form of a sheetmetal muffle, with a number of gas burners in the base, and with a screw jack at the outer or shank end so as to permit accurate adjustment of the level of the cutter between the supporting yokes.

The side of the furnace from which the welder works while depositing the metal terminates in a sloping pulpit, adjustable along its supporting arms over travel sufficient to accommodate any of the cutters to be reconditioned. The upper edge of the adjustable portion carries a wide copper plate, beveled at the line of contact with the cutter so as to provide a line against which it is only necessary to build up the hard-facing metal to restore the contour of the cutting edge. The copper facing piece is made just as thick as a flute, so the simple placing of the plate in position determines the thickness of the build-up as well as its outline.

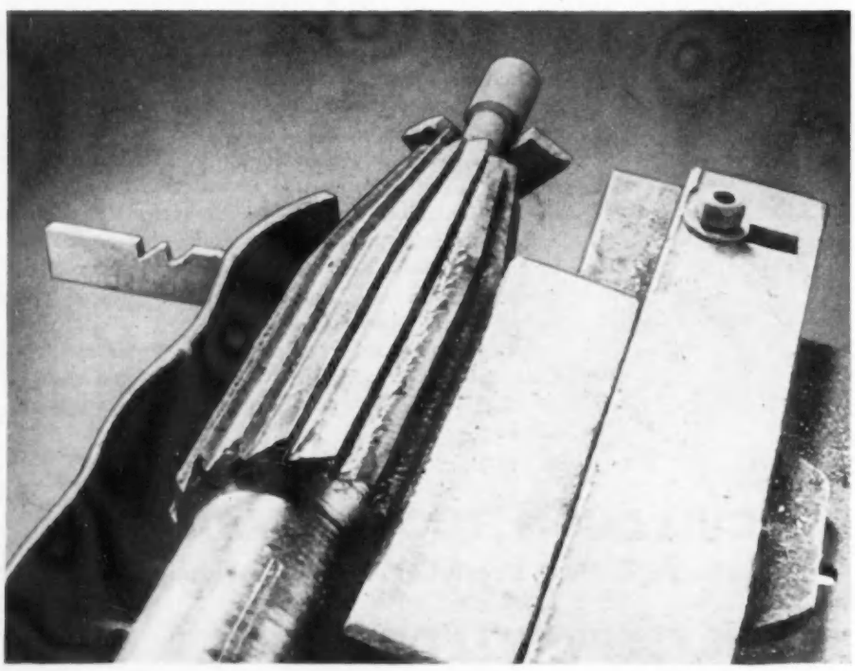


Field-constructed muffle furnace for preheating and rebuilding milling cutters.

The other side member of the furnace, opposite the welder's stand, is hinged at the bottom, with a pair of notched supporting arms at the top so as to permit it to be moved in toward the cutter as it rests on the supporting yokes, directing the heat from the burners against the cutter and preventing loss through a gap too wide for effective firing.

Use of the combination preheating furnace and welding jig enables all welding to be done downhand, in the flat position. The adjustable copper alignment plate, fitting snugly against the milling cutter, also retains the heat in that portion of the tool next to be reconditioned, making for most desirable welding conditions.

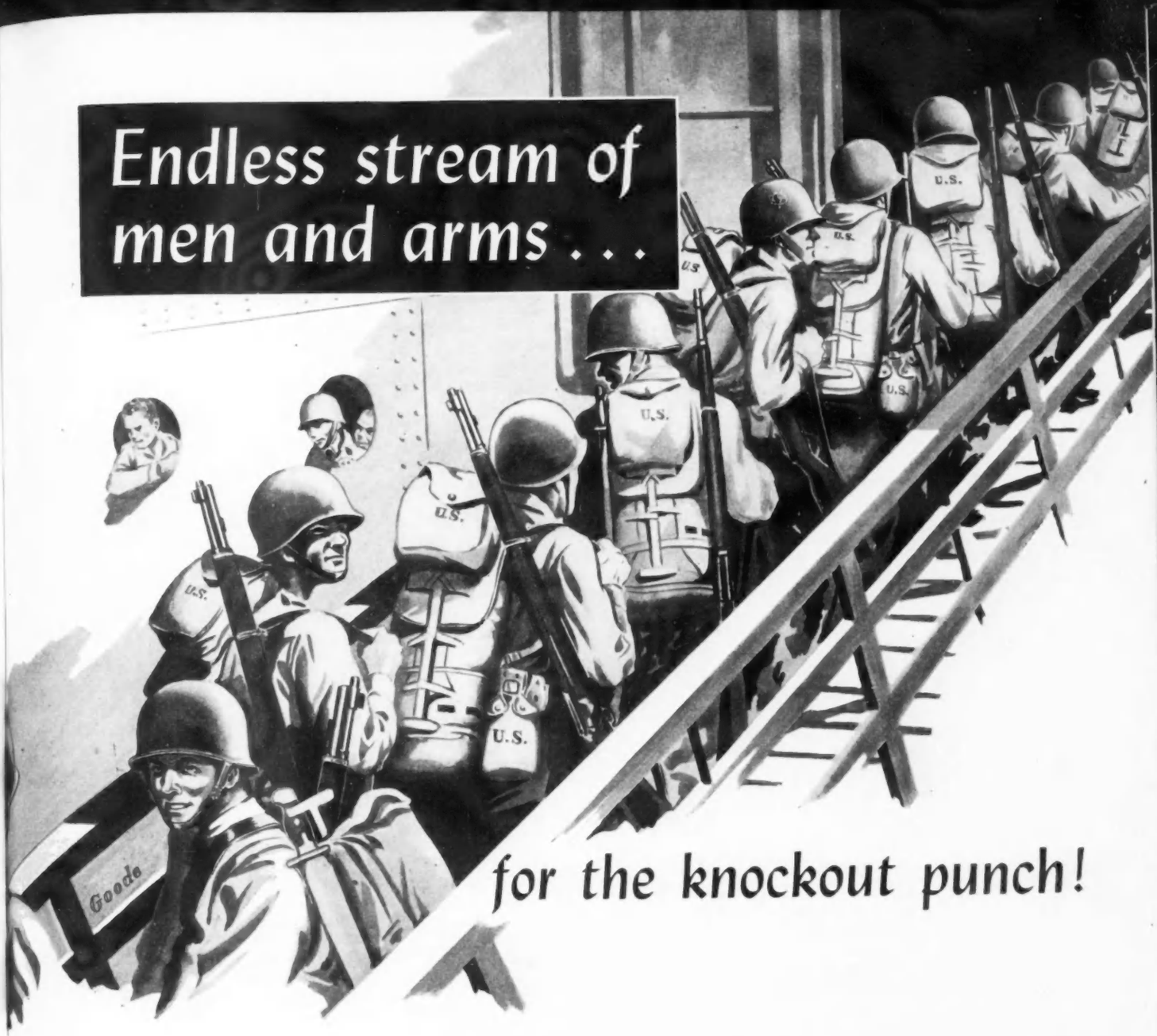
By fitting a hood over the furnace top, and by slowly rotating the cutter in its supporting yokes, some operators also secure a satisfactory normalizing action which completely relieves the cutting edges of localized stresses. The time required for field rebuilding with a competent welder is no longer than that required for a shop job, and the cutter, as soon as reconditioned, is again ready to resume milling in the hole.



Milling cutter supported in end yoke and adjusted to proper level by screw jack under shank, with laid-on copper contour plate limiting height and width of hard-facing metal used in rebuilding worn cutting edges.

—Photographs courtesy The Stoody Company

Endless stream of men and arms . . .



for the knockout punch!

It takes an endless stream of money to keep an endless stream of men and arms going to the fighting front. It takes all-out bond buying and all-out war effort to insure decisive, total, final victory.

If the sacrifice seems great, consider the cost of anything less than total victory. An indecisive ending would mean the supporting of vast armies and navies for years to come, and another war so terrible in destructiveness as to make this one seem tame in comparison.

Mission men are each day going all-out in their work on war matériel, in their bond buying and other war efforts to help bring about quick victory and the return from the fighting front of relatives and friends.

By buying bonds with every dollar we can get together . . . now . . . we hasten the total destruction of the Axis philosophy of human regementation. These bonds will create a great purchasing reservoir for post war prosperity. The more bonds one buys, the bigger stake in that prosperity.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

MISSION MANUFACTURING CO.
HUMBLE ROAD HOUSTON, TEXAS

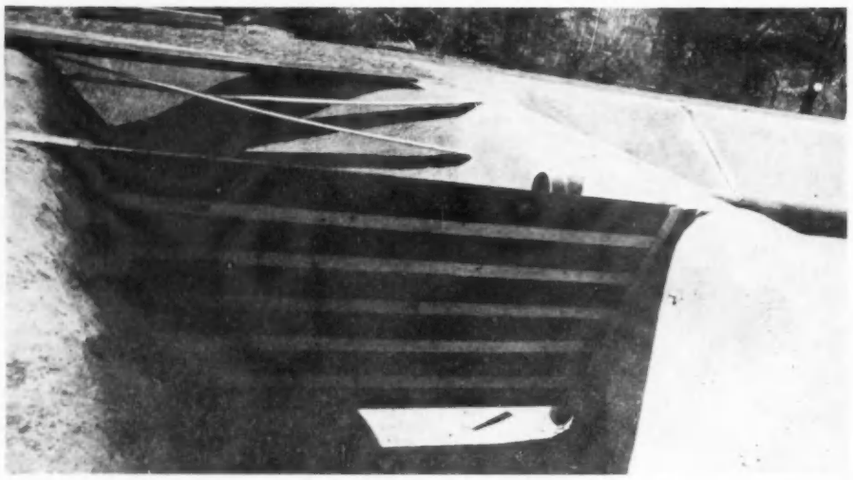
MANUFACTURERS OF: Mission Slush Pump Valves . . . Mission Slush Pump Pistons . . . Mission Piston Rods . . . Mission Gland Packings . . . Mission Rotary Slips . . . Mission Swabs . . . Mission Plug Valves.

PRACTICAL OPERATING *Hints* FOR THE PRODUCTION MAN

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston.*

1. SALT WATER DISPOSAL

Sealing Battens Aid Baffle Tightness



Semi-flexible sealing of gaps between plank units in baffle prevents oil seepage and permits the individual timbers to adjust under swelling without distorting set-up.

PROVISION for swelling of the treated timbers used for making the settlement baffles in a salt-water disposal pit enables the individual planks to be grouted into the side walls and all flow to be directed below the baffle instead of some of the trapped oil oozing through the chinks and finding its way into the return system.

The timbers are set up with a slight gap between abutting edges, instead of being laid close (when dry), and thus may swell across the grain as they absorb water without exerting pressure on adjacent planking. By the time swelling is completed, the timbers nearly but not quite close the gap left initially.

Closure of the aperture between timbers is obtained by nailing on the upstream side strips of 1x4-inch material, unpainted and untreated. These battens are nailed at the edges of the two timbers, forming a seal sufficiently tight to exclude oil. The nails and contact area between batten and plank give sufficiently to permit the treated timber to expand as much as necessary without affecting the joint.

When the battens have rotted away, they may be replaced without disturbing the treated timbers, and the closure of the baffle again made effective at a fraction of the cost required where the timbers are laid tight, and distortion takes place under swelling.

Use of the battens also aids in replacing any plank of the unit which may fail in service.

2. DRIVES

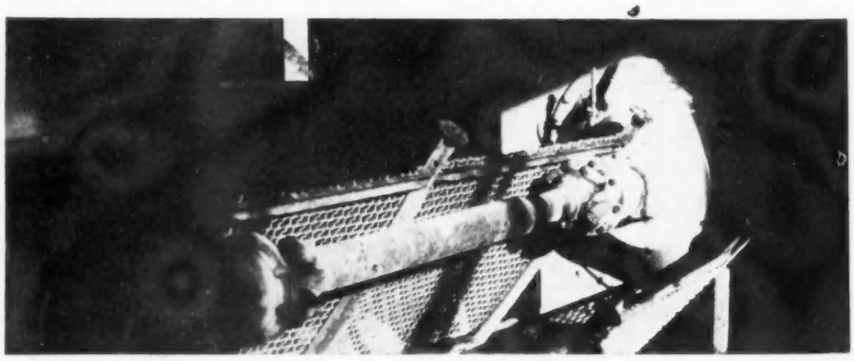
Propeller Shaft Unit Simplifies Hook-up

FIXED mounting of internal-combustion engine and pump requires a minimum of space, but calls for accurate alignment if shafts, bearings and unit bases are not to be subjected to excessive stresses through offset drive.

One company prefers to sacrifice the compactness of the close-couple units in order to insure both against possible shift in service. The drive between the two is obtained through a salvaged automobile drive shaft, in which the splined end is attached to the engine shaft, and the universal normally adjacent to the differential housing is attached to the stub shaft of the pump.

By retaining the splined slip joint on the shaft, instead of setting the universals directly on a rigid shaft, expansion of the drive under varying temperatures is automatically compensated for, and slack is provided which permits disconnection of either universal for testing or servicing without interfering with the rigidly bolted driving or driven unit.

Since the universals are operated at speeds much below that for which they are designed in automotive service, the initial packing of lubricant applied at the time of installation will usually serve throughout the life of the drive.



Transfer of reclaimed automobile drive shaft complete with splined slipjoint enables this pump drive to operate effectively regardless of possible misalignment.

3. LEASE MARKING

Standardized Support Aids Area Control

CONTROL of unauthorized traffic on the lease is aided by properly identifying properties so that visitors seeking one company do not have to enter on other than the leases they seek. Also protection against damage suits arising from use of lease roads is afforded by the posting of signs indicating that the apparent highway is not open to the public.

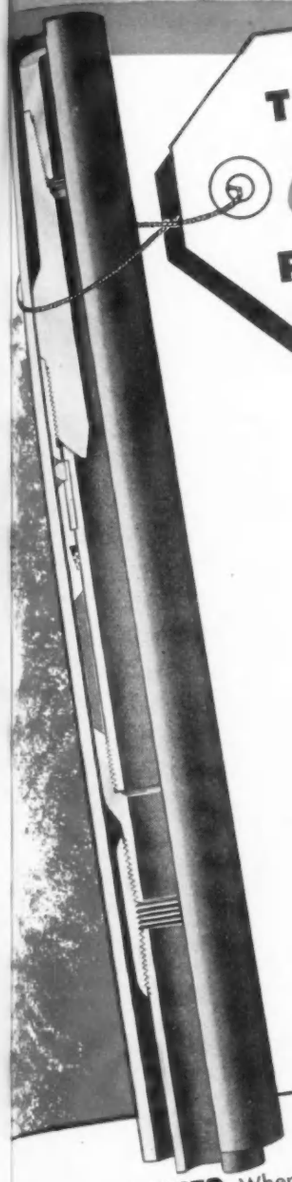
One company uses a neat square frame, one corner carried in a pipe post, with horizontal and vertical braces on which may be placed the signs indi-

Baash-Ross News

BAASH-ROSS TOOL COMPANY · LOS ANGELES · HOUSTON · NEW YORK

OIL WEEKLY EDITION

THE BAASH-ROSS *Controlled action* PACKING ADAPTER



A NEW BAASH-ROSS TOOL TO SIMPLIFY AND SAFEGUARD YOUR PRODUCTION OPERATIONS

ONE of the most important factors in the success of modern cementing and production operations is that you have *complete control* over your pack-off equipment at all times. And in wells where bridges or tight spots are encountered—or where the liner is set against bottom—conventional packers generally do not offer the full control so essential to today's production methods.

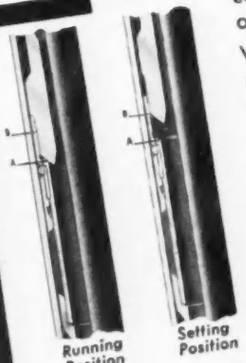
The new Baash-Ross Controlled Action Packing Adapter is particularly engineered for just such operating conditions. It will not set accidentally, even under adverse hole conditions... it requires *no dangerous torque* in the string for operation (vitally important where tubing is used)... and yet pack-off is simple, positive, *and under full control from the surface at all times—without risky left-handing of string.*

WHAT IT IS The Controlled Action Packer is similar in appearance to a conventional type packer, but is so constructed that the packing element cannot be expanded until the setting tool is backed off a number of revolutions. Then, by simply setting the weight of the string back down, the seal is expanded. There are no spring-actuated parts to stick or complex mechanisms to jam—nothing to interfere with positive operation.

HOW IT WORKS Note the unusually simple, safe operation of this tool. When the packer assembly is made up on the liner or casing section it is attached to the setting tool by means of the coarse left-hand thread. When the setting tool is in full thread engagement, the end of the setting tool rests against the shoulder "A", thus locking the sleeve "B" against movement with respect to the body of the packer. You can run the packer assembly into bridges and tight spots, you can work it through windows, or you can even strike the bottom of the hole without risk of expanding the packing element.

When you are ready to set the packer, the operation is simple. You merely back off the run-in string about ten turns to the right and set the weight down, thus expanding the packing element. That's all there is to it.

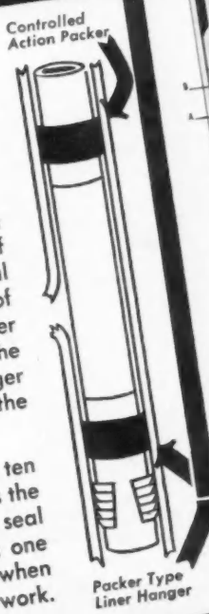
Backing off the run-in string lifts the setting tool a short distance above shoulder "A" so that when the weight is set down it is applied directly against the sleeve "B" instead of against the shoulder. As the sleeve is forced down, the packing element is expanded against the casing wall to form a fluid-tight seal. When the packing is expanded, a positive friction lock prevents the sliding sleeve from returning to its original position, and the run-in string can then be released. The entire setting action is fast—simple—and under full control at all times.



WHERE IT'S USED Wherever complete control of pack-off operations is required—whether in setting liners... cementing... making repairs on water strings ...or performing any other similar production work with maximum ease and safety—the Baash-Ross Controlled Action Packer is the ideal tool for the job.

For example, in "scabbing" operations the Packer can be run with a Baash-Ross Liner Hanger to seal off damaged or leaky casing. For this, a conventional packing-type liner hanger is run at the lower end of the scabbing sleeve and a Controlled Action Packer at the upper end. When the blank pipe is opposite the damaged section of casing, the bottom liner hanger is set in the usual manner by turning the string to the left and setting down to release the slips.

After the bottom packer is set, rotating the string ten turns to the right and again setting down expands the Controlled Action Packer above, completing the seal both above and below the damaged casing on one run into the hole. The packer is equally effective when cementing, setting liners and for other repair work.



▶ Your nearest Baash-Ross representative will be glad to show you how to simplify and safeguard *your* production operations with this latest Baash-Ross advancement. *Or write Baash-Ross direct!*

KEEP YOUR WELL CONTROL and COMPLETION OPERATIONS OUT OF THE RED . . .

BROWN OIL TOOLS INC. BOT HOUSTON TEXAS

Call BROWN

Houston • Corpus Christi • Lake Charles
New Iberia • Houma

YOUR XMAS TREE IS ONLY AS SAFE AS ITS FITTINGS

Specify UNIBOLT tees, crosses and chokes for your trees . . . they have an even higher safety factor than ring joint flanged unions, but weigh less and are more economical.

UNIBOLT
THE ONE BOLT COUPLING

THORNHILL-CRAVER COMPANY
HOUSTON

BOWEN SOLID LINE WIPER

SAFETY - ECONOMY - UTILITY
DEPENDABILITY
CONVENIENCE

Patented

This Line Wiper, as illustrated, is available with or without the remotely controlled Packing Nut Tightener. It is the most versatile line wiping and oil saving device of its kind.

The size with 3" bottom connection will allow tools 1¾" OD to pass through it.

Descriptive literature with complete instructions is packed with every tool.

BOWEN CO. OF TEXAS, INC.
Office: 2429 Crockett Street, Phone Capitol-6751
P. O. BOX 1025 HOUSTON 1, TEXAS
Phones: Odessa, Tex., 683—Midland, Tex., 1419
Through Supply Stores Anywhere in U. S. A.

cating ownership, lease identification, and any warning required by local laws. If board signs are used, the brackets aid in their ready removal for transportation to a central point for repainting or

Display of lease and company identification with trespass warning is easy on this frame.

renewal—permiting this work to be done as a bad-weather fill-in, and insuring that the work be done on properly conditioned backgrounds.

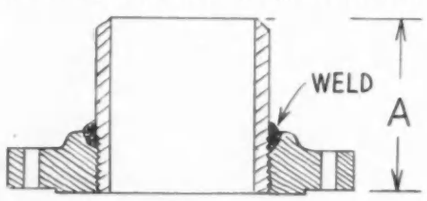
The post is set into concrete to prevent removal or shifting of the sign by wind, storm or irresponsible trespassers.

4. FITTINGS

Reclaimed Flanges Fill Wartime Need

JUNKED flanges are reclaimed by facing after being made up on a short pipe nipple with the pipe end beveled for welding, and materials are thus obtained which are not obtainable through normal supply outlets, due to priorities, excessive demand, and wartime steel restrictions.

The junked flanges are checked for proper thread diameter, with the thread being chased if necessary, and then screwed onto a short nipple of a standardized length. The heel of the thread, where the nipple emerges from the flange, is given a heavy seal weld, to insure tightness even though the thread may be incomplete or apt to leak. The nipple is then beveled to the usual angle, and welded to the pipe in the usual manner.



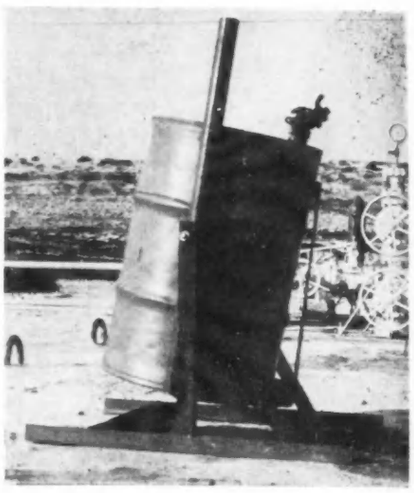
Welded seal and standardized nipple length make this shop-welded unit quickly available.

In addition to providing flanges at a time when they were urgently needed, the processing salvaged the flanges and showed monetary savings as follows:

Size	A	Cost Purchased Flg.	Cost Reclaimed Flg.	Savings
4	6"	$ 2.11	$1.02	$ 1.09
6	6"	3.80	1.36	2.44
8	6"	6.50	2.10	4.40
10	6"	9.42	3.04	6.38
12	6"	15.69	4.75	10.94

5. TREATING

Controlled Pouring Prevents Fluid Loss



Extension handle on drum canting device provides better control of flow and prevents loss.

THE drum of treating chemical can readily be handled without waste of contents by the switcher or pumper, if mounted on a tilting rack. One company uses a rack which normally holds the drum upright, but which is provided with an extension handle on the cradle so that the operator is provided with control of the amount of drum tilt—under his left hand—while the right is left free to manipulate the spigot and provide against overfilling of the transfer vessel.

With the pivot point set slightly above the center of the drum, it tends to keep the spigot elevated even when full, yet does not require excessive force to rotate the drum even when the fluid is contained in half or less of the drum.

Automatic return of the drum to the vertical guards against loss of fluid through a leaking valve or possible poor joint at the bung when the spigot is installed.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

THE $134,000,000 Canol project in Northwest Canada was the major oil subject of discussion in Washington last week as the Truman committee, in three days of hearings, developed that the venture was "considered" only at a brief meeting in April, 1942, and embarked upon within 24 hours thereafter, with no information as to costs, results or difficulties.

However, while the committee brought out the facts of the project, which its counsel estimated would provide 100-octane gasoline for the Army at a cost of $2.76 per gallon, members admitted there was probably nothing they could do beyond publicizing the abandonment with which the War Department acted in its efforts to build up the Alaskan defenses. At the same time, there were indications that the spotlighting of the project might divert reported proposals to increase the pipeline and refinery facilities of the project and bring about attempts to re-negotiate the contracts for its undertaking, to give the United States something after the war to show for its money.

On the other side of the capitol, supporters of the Disney bill to legislate a price increase for crude oil announced that they had secured the last of the 218 signatures necessary to make effective their petition to relieve the committee of further consideration of the measure and bring it up on the floor for consideration and vote. The bill is expected to come up early in December.

PAW during the week announced the resignation of one of its top-flight executives, J. R. Parten, director of transportation, who spearheaded the job of pipe-lining enough oil to the East to offset the loss of tankers.

Committee Told Canol Project Started Without Study of Costs or Results

Enough Signatures Obtained to Bring Disney Price Bill To House Floor

By B. F. LINZ
Washington Correspondent

☆ ☆ ☆ ☆

Investigators Told Weird Story of Army Rushing Into $100,000,000 Canol Venture

A weird story of how the Army embarked on a $100,000,000 venture to develop Canadian oil resources without any study of probable costs, time or material requirements or possible supply, without consultation with oil experts in or out of the government other than representatives of the company owning the oil and without any consideration of alternative means to reach the same objective, was unfolded last week before the Truman Committee to Investigate the National Defense Program.

The story elicited by the questioning by members of the committee and Hugh Fulton, its counsel, was one of an overnight decision to go into a project about which no one apparently knew much, early in 1942, in an effort to provide gasoline for the fueling of trucks and planes along the Alcan highway by the spring of 1943, but which actually will supply no gasoline before next spring and then only at the rate of less than 500 barrels daily—a project which, only in October, the joint chiefs of staff passed upon and said should be carried to completion even though the threat of invasion had been eliminated.

And, furthermore, it was revealed, the contracts under which Canol is being pushed provide that all of the facilities constructed by the United States Army shall be sold to Canada or Imperial Oil, Limited, at the end of the war at a market price to be set by a joint commission; the wells developed shall become the property of the oil company, and the United States shall be recouped for its expenditure, to such extent possible, by a 75-cent reduction in the price it is to pay for the oil, after it has taken the first 1,500,000 barrels at $1.25 per barrel.

First witness before the committee, Ickes testified that the whole Canol project is under study by PAW and the War Department but declared the contracts between the United States and Canadian governments and between the former and Imperial Oil were not in the interest of this country, and the work "ought to be junked now."

His criticisms of the department's operations were later echoed by Harold D. Smith, Director of the Budget, and H. LeRoy Whitney, technical consultant to WPB Chairman Donald M. Nelson.

Learned By Accident

Ickes told the committee that PAW first heard reports of the Canol project when Davies met one of the contractors in a hotel lobby in the spring of 1942.

The correspondence showed that he chided the Secretary of War for not informing PAW and called attention to the President's letter establishing the office of oil coordinator.

In another letter, the difficulties of the Army project were pointed out and the suggestion made that products be tankered from California to Skagway, via the Inland Passage, and then pipelined or tank-carried to White Horse and other strategic points, which could be accomplished at a fraction of the cost of the proposed Fort Norman project. This proposal was finally adopted and a pipe line built, but the Army did not alter its Fort Norman blueprint.

In making this suggestion, Ickes told Secretary Stimson that "it would seem to be preferable to build up stocks of products at these strategic points in Alaska and Canada, rather than to depend upon the uninterrupted operation of production, pipe-line and refining facilities under the adverse geographic and climatic conditions that would prevail.

"To make a specific comparison of one phase of this operation," he wrote, "one average-size tanker could in four trips supply as much aviation fuel as could be manufactured in this proposed 3000-barrel refinery during the year. This assumes maximum production through the utilization of a catalytic cracking unit, as well as an isomerization unit, and alkylation unit, and other specialized ancillary equipment."

In reply, Acting Secretary Patterson expressed regret that "exigencies of the military situation and the need for immediate decision and the greatest speed did not permit consultation with your office before authorization of the project."

In July of last year, Stimson advised Ickes that his suggestion had been adopted, and a four-inch pipe line would be built between Skagway and White Horse, with necessary storage, and gasoline would be barged between Prince Rupert and Skagway.

Ickes expressed appreciation of the move and recommended that a competent oil engineer be sent to observe and report upon the work and upon Stimson's acceptance of the offer assigned Glen F. Ruby, former chief geologist of Hudson Bay Company.

Shortly after he was advised by Patterson that new wells at Fort Norman "indicated production possibilities sufficient to justify resumption of the original project" and the department was going ahead. This was done, he told the committee, before Ruby had made his report.

Ickes protested the department's haste and also inquired whether it was proposed to use cracking stills from existing plants in this country, which would interfere with the quick-butadiene program and important foreign projects that were under consideration, and Stimson replied evasively that the work under way was of a preparatory character.

When Ruby's report came in, he testified, he sent a copy to Stimson with a letter commenting that the report

"caused us to conclude that the pipe line and refinery were not justifiable, even as an emergency project."

"On December 9, Acting Secretary Patterson wrote to me, commenting on the Ruby report," Ickes continued. "He said that, since the production of 3000 barrels daily from the Norman Wells field was now assured, the project was considered to be fully justified. He added that the pipe line was considered entirely practicable by the Army engineers and by the consultants engaged on the project; and that the considered opinion of all concerned was that the characteristics of the crude would permit year-round operation."

This apparently invoked an Ickesque reply, for the Administrator did not quote from the letter, "inasmuch as it might be interpreted as controversial," but agreed to turn it over to the committee.

PAW, he said, never has seen the contracts for the project, and while he would not be too critical of projects undertaken at a time when a Japanese invasion was feared, that danger has passed and "it would seem to be appropriate for the War Department and the oil experts of my staff to re-examine the terms and conditions of the contractual arrangements with a view to deciding whether modifications should not be made to protect the post-war future of oil supplies for Alaska and this country.

"After all," he said, "there is no denying the fact that the moneys, materials and labor for the construction of the refinery at White Horse and the pipe line from Fort Norman have all been provided by the United States. Likewise there is no denying the fact that it is these factors which will give peacetime value to the oil reserves which may exist in the Fort Norman area. This country took the financial risk that discoveries of oil in substantial quantities would be made in the Fort Norman area. Not only did we risk the cost of a refinery and pipe lines, we also provided all of the funds and materials for drilling wells in the MacKenzie River Basin. I am told that this exploration has resulted in the discovery of substantial reserves. * * * In return for the enormous investments and risks which we alone have assumed from the very beginning, the United States ought to be accorded a permanent peacetime share of the oil and products to be produced upon terms commensurate with the magnitude of the contribution which this government has made."

Recently, he went on, the Army has listened to his plea for exploration of Alaskan possibilities and a test well will be sunk next spring. While refusing to investigate our own possibilities, the Army is engaged in exploring 600,000 square miles of Canadian lands, stopping at the Alaskan border.

Senator Harley Kilgore, who visited the area in September, told Ickes the contract called for purchase of the oil by the United States at $1.25 per barrel at the well head which, since this government had drilled the wells and would transport the oil through its own facilities, represented a "royalty" to the land owner, and the administrator agreed that it might be considered a royalty, and a very high one.

The White Horse refinery is to use a cracking unit taken from a refinery in Texas, which was a cause of considerable concern to PAW.

Hugh Fulton, committee counsel, pointed out that after the war the refinery is to be valued by a joint United States-Canadian commission and the Canadian government is to have first option to purchase the plant and pipe line at the "commercial" valuation so set.

"I do not think it will have any value after the war," Ickes said, pointing out that whether it could be operated would depend upon the willingness of Imperial to furnish the crude. The contract provides that the facilities are not to be scrapped but are to be sold as they stand. The refinery will cost some $24,500,000.

After the War

"All facilities are to be held intact after the war and be the property of the Imperial Oil Company, and the Canadian government will have a half interest in all development outside the Imperial lease and the option to buy all the above-ground facilities," Kilgore explained. "Who, aside from the Canadian government or Imperial could bid on the facilities?"

"I think only the Canadian government and Imperial," Davies replied from his seat beside Ickes.

Kilgore brought out that an eight-inch line would have required twice as much material but would not have cost twice as much to build, but would have carried five times as much oil. The four-inch line and refinery have a capacity of 3000 barrels a day, while the field is to produce 20,000 barrels, but no satisfactory explanation was secured as to the handling of the other 17,000 barrels.

Decision of the Army not to use the Houdry process, Kilgore pointed out, will reduce aviation gasoline production of the refinery by more than two thirds, and the amount turned out will be only a fraction of that needed for any extensive air operations. Under the Houdry process 1505 barrels a day could have been produced, but only 479 barrels can be made by the method adopted.

Little Budget Control

The first intimation the Budget Bureau had of the Canol project was in May, 1942, when the department asked $25,000,000. Early this year it was found that the Army had obligated itself for two and one half times that much and an examination was started when it was found the over-all cost would be in the neighborhood of $120,000,000, Smith testified.

Smith explained that the department had been given great latitude by Congress in spending money and the Budget Bureau had little control, but after a study it was recommended that the Army retrench, and the department agreed it would reduce the expenditure to $88,000,000. Later, he said, Economic Director Byrnes ordered the project studied by the joint chiefs of staff.

The Budget Bureau study did not go into detailed costs, but Senator Homer Ferguson cited reports that truck drivers were paid $1000 a month, that the contractor built a temporary office building at a cost of $259,000 at Edmonton, 1000 miles from White Horse, where the work was going on, on land for which he paid rent, using California redwood shipped in from the States instead of local lumber. The building is to be turned over to the city after the project is completed—without cost.

Whitney told the committee the Army never advised WPB what it was doing in Canada and the project was discovered by chance. WPB doubted the value of both Canol and the Alcan highway and recommended the entire program be submitted to the requirements committee for study, predicting that the project would be investigated by Congress, but Patterson held the department was not called upon to explain or justify its actions to anyone because the project was one of military strategy.

WPB files showed that the matter was the cause of much concern because it interfered with the distribution of materials for needed projects. Whitney finally made an investigation of his own and reported to Nelson that from November to April it would be "the height of folly to attempt to pipe-line crude" over the projected route, with temperatures running 70 below zero or better.

War Department View

The first witness for the War Department was Dean Graham, who testified that almost immediately after the Pearl Harbor attack Frederic A. Delano, chairman of the National Resources Planning Board, urged the development of a Canadian railroad to provide inland access to Alaska. Graham was assigned by General Somervell to go into the matter with Delano, and others, including Dr. Vilhjalmur Stefansson, the Artic explorer, were brought into the discussions, which covered not only the railroad but two water routes and the road which eventually became the Alcan highway, linking up the air fields between Edmonton and Fairbanks.

It was Stefansson, Graham related, who first brought up the possibility of using the Fort Norman oil, and Canol was conceived as a means of supplying gasoline for the highway. However, Graham said, the project did not aim originally at 100-octane but at "60- or 65"-octane motor gasoline for the trucks.

Knowing little about the Fort Norman field, Graham had the oil company send to Washington men familiar with the development who, he said, reported they had a 400-barrel production of 40-42-gravity oil which they could pump at temperatures of 55° below zero. Within 24 hours after that meeting, he testified, he wrote a one-page memorandum for Somervell recommending that the project be undertaken, and Somervell issued a directive putting it under way.

Graham was insistent that the project was still valid and, he told the committee, "if I had to write it (the recommendation) today, with all the fact that the war has moved westward, I would only change six words" to give the Engineer Corps the choice of Fort St. John or Whitehorse as the site for the refinery.

Fulton brought out that Imperial Oil, itself, had some doubt as to the productivity of the field and in May, 1942, wrote that only 5 wells had been drilled, 4 of them in a group, only 3 of which could be considered as producers, and was not sure that locations could be

found for the 45 wells which it was planned to sink.

Asked for his opinion of that letter, Graham said "I look upon the letter as Standard Oil of New Jersey's way of setting up an alibi in case the thing was a failure."

Asked how he expected to move the field's 20,000-barrel production through a 3000-barrel oil line, Graham said additional lines could be laid and the refinery enlarged.

Patterson submitted a lengthy defense of the project in a prepared statement the tone of which was keynoted in the opening sentence that "the War Department is proud of Canol."

"The Army took bold and prompt action in the dark days of '42," Patterson asserted. "We uncovered a rich continental resource of oil, far beyond the original target of 3000 barrels a day. Twenty thousand barrels a day is now assured. We already have uncovered an estimated pool of 50 to 100 million barrels. But for our action, this would not have been discovered. Had our endeavor been unsuccessful, it would have been a setback to us. But we should not have been censured for having tried. Now that oil in large quantity has been discovered and can be put to use, our enemies are the ones to be discouraged.

"This job of high strategic importance for carrying on the war has been approved by the Joint Chiefs of Staff. That should settle any doubts."

It was questionable, however, whether the Joint Chiefs of Staff settled any doubts of the committee, who finally drew from Patterson an admission that a study of the contracts, to see whether they could be re-negotiated on terms more favorable to the United States, was instituted two weeks ago, while the committee was investigating the matter.

It has been Army policy, he said, to attempt to develop local sources of supply wherever troops were stationed, and oil has been sought in New Zealand and Australia, a statement which led the committee to ask whether the department has any more Canol projects in mind.

Throughout his testimony, the Undersecretary stressed the immediate need for the oil in 1942 and insisted that the approval of the Joint Chiefs of Staff justified the project, although it was brought out that that group did not pass on the matter until October 26, some 18 months after it was initiated, and Patterson did not know what information it had on which to base its action.

Canol, Patterson asserted, may set a pattern for the future.

"The Canol project, so far as I know," he said, "is the first major venture of the United States government in oil production on foreign soil. After our experience with gasoline rationing and the serious depletion of our own crude oil reserves, I believe that the American people may favor similar ventures in the near future."

Admitting that the contracts give us no post-war rights to the Canadian oil, and Canada may acquire the refinery and pipe line, Patterson, nevertheless, expressed conviction "that what we have done so far is sound and that Canol will be a continuing benefit to our country in its peace-time economy, just as it is during this war."

At its final session November 24, the committee interrogated Major General A. H. Carter, War Department finance officer, and Brigadier General Walter B. Pyron, chairman of the Joint Army-Navy Petroleum Board.

Carter's testimony disclosed that his only connection with the matter was as an intermediary at Graham's request to contact Imperial experts for the initial meeting, which was held in his office.

Pyron testified that he was consulted regarding the possibility of developing the Norman Wells field and that his belief that it could produce 3000 barrels daily was a deciding factor in the determination to undertake that phase of the project; he had no connection with the refinery or pipe-line phases except that he was consulted by Army engineers regarding the contract with Noble Drilling Company to sink 100 wells on a cost-plus-fixed fee of $290,000 basis, with the government buying from the company the rigs which were to be used. Pyron explained that if all the wells were drilled the company would receive about five percent of the cost of the operation, "which does not seem to be excessive."

Testifying that there was a directive to produce the 20,000-barrel daily output of the field and that, presumably, it was planned to make use of the production, Pyron indicated the possibility that the $134,000,000 so far estimated as the cost of the project would be increased to provide additional pipe-line and refinery facilities, but said that he had no direct knowledge of the matter.

In a final effort to place the responsibility for the Canol project, the committee plans to question Lieutenant General Brehon Somervell, chief of the Army Service Forces, who signed the directive initiating the development, but since Somervell is now out of the country no date was set for another hearing.

As the investigation drew toward a close, Chairman Truman told reporters that the Canol adventure was a "bad project" which should not have been undertaken, but indicated he saw no direct action to remedy the situation possible to the committee.

Truman said he was not impressed by Patterson's assertion that the department was proud of Canol and the protection of Alaskan defenses, pointing out that the oil cannot be utilized before next spring. The whole thing, he said, was "indefensible from any standpoint."

House Petition Brings Oil Price Bill to Floor

Signatures to the petition to bring the Disney bill out of committee so that the House might vote on the question of an increased price for crude oil reached the necessary 218 November 23.

The announcement that a majority of members of the House had signed up was made by Representative Leon H. Gavin of Pennsylvania, who pointed out that the effort to force action on the legislation was not confined to any "oil bloc" but had been participated in by representatives from the consuming states who saw in the decline in exploration the draining of the resources on which their constituents depend for gasoline and heating oil.

Gavin laid the blame for the pressure on the House leadership at the door of OPA to which, he said, Congress delegated the authority to regulate prices, and also the duty of safeguarding the supply of essential commodities and materials.

"As to petroleum," he told the House, "the obligation was ignored. We have had excuses, delays, evasions and dodging of the issue. The oil reserves of the nation were drawn upon to capacity, the military demands increased and the consumer's supply was lowered. The only program the Administration offered was more and more rationing. Supply was ignored."

"It is probable that a legion of the OPA's defenders will spring into action at once and try to confuse the issue," Gavin warned. "They will represent, as they have in the past, that a price raise on petroleum would destroy the entire national economy and probably prolong the war.

"We will meet them at every turn, for we are determined to stop this ruinous depletion of the nation's oil reserves. The time is here for action to increase supply and not permit further bungling."

East Coast Shipments Improve During Year

Oil shipments to the East Coast now are running more than 500,000 barrels daily ahead of a year ago and stocks are improving, although still far below normal, it was disclosed in the weekly report of PAW.

During the week ended November 20, daily receipts included 424,593 barrels by pipe line, against 120,643 barrels in the corresponding period last year, 765,346 barrels by tank car against 783,882 barrels, and 514,292 barrels by water against 235,802 barrels, a total of 1,704,231 barrels against 1,140,327 barrels.

Nearly three quarters of the pipe line receipts came through the Big-Inch, which on one day during the week delivered 1518 barrels more than its rated 300,000-barrel capacity.

Inventories of both gasoline and heating oil increased during the week, the former jumping from 36.6 to 39.5 percent and the latter from 59.7 to 64.2 percent, but kerosine fell off from 52.9 to 52.3 percent and residual oil from 78.3 to 76.3 percent of normal pre-war levels.

The tight situation on gasoline and kerosine, it was explained, is due to the failure of refinery runs in the Southwest and Middle West to come up to expectations, a matter on which PAW is working.

It was explained by Ralph K. Davies that water deliveries during the week were abnormally high, due to the availability of extra tanker space. Railroad shipments, which declined as Big-Inch came into operation, are expected to remain under 800,000 barrels a day now that pipe line and water facilities are able to carry more of the load. Some 11,000 cars have been released for other runs as a result of capacity operation on the eastern leg of the 24-inch conduit.

Wilson Succeeds Parten As Transportation Head

Appointment of George A. Wilson, on leave from Standard Oil Company (Louisiana), as director of transportation was announced was announced November 26 by PAW. Wilson, who joined PAW in April, 1942, succeeds J. R. Parten, who resigned to return to his private business. For the past 20 months, Wilson was executive officer of the transportation division, working closely with Parten on all transportation problems and programs.

Prior to joining Standard Oil, Wilson had been engaged in private law practice as a specialist and consultant on oil and gas, in New Orleans, and in 1940 was appointed general counsel to the Louisiana Conservation Commission and the State Department of Minerals.

Parten will return to his civilian job of president of Woodley Petroleum Company of Houston, and chairman of Premier Oil Refining Company of Longview, Texas. Parten came to Washington in August, 1941, as a member tanker coordinating board. He became head of PAW's transportation division in April, 1942. Under Parten's direction the vast network of pipe lines now being completed was developed and constructed to provide the East with oil formerly received by tanker.

Government Will Lease Long Beach Channel

Charging that an estimated 17,000,000 barrels of oil and gas underlying the Cerritos Channel between Los Angeles and Long Beach, California, are being drained from government property at the rate of 1,000,000 barrels a year by the private owners of surrounding tracts, Secretary of the Interior Ickes has announced that sealed bids will be opened in Washington December 13 for leases on 92 acres of government lands in the channel.

The bids are to be on the basis of 16 2/3 percent royalty on production and the highest bonus, which is expected to exceed the record of $5,800 an acre offered for land in the Elk Basin (Wyoming) field, since the Cerritos Channel lands are estimated at 185,000 barrels an acre, nearly four times the potential of the known Elk Basin reserves.

The leasing program calls for drilling to begin within 60 days after delivery of the lease, and the drilling of 10 wells to production within 12 months and an additional 6 wells within the next six months, but the secretary may give consent to the drilling of a lesser number as well as to a unit plan of operation, if proposed by the lessee.

Michigan Operators Oppose Proposed Production Cut

Unanimous opposition by producer-representatives was expressed at the November 22 hearing at Lansing to consider recommendations by state retained engineers for an overhauling of the Reed City field proration program. Dr. G. G. Brown and Donald Katz, engineers with the University of Michigan staff, recommended cutting of well allowables from the present figure of 125 to 80 barrels per day to stabilize the reservoir pressure and balance total hydrocarbon withdrawal against water invasion of the pool. Brown estimated that the change would assure ultimate recovery of the estimated total recoverable oil in the pool and might up it some 10 percent of 7,000,000 barrels.

The State Oil Advisory Board deferred action to permit further study of the proposals and will meet again November 29 to finally argue the proposal.

Texas Water-Oil Ratio Order Upheld by Court

The second suit attacking the water-oil ratio order entered by the Texas Railroad Commission for the East Texas field was dismissed with prejudice in District Court at Austin last week. The dismissal was ordered after the Texas Railroad Commission had indicated that it would grant relief to Roosth and Genecov, the plaintiffs.

Thereafter the commission entered orders permitting these operators and three others to close in wells on some of their leases and transfer the allowables to other leases. This move was of unusual significance because thereafter members of the commission suggested that a water-oil ratio order might be entered for Conroe in Montgomery County. Jack Baumel, director of production for the commission, said he thought such an order might be advisable for all wells producing from water driven reservoirs.

Commissioner Ernest Thompson issued a statement in which he said in part:

"The principle of a proper water-oil ratio has now become thoroughly understood and accepted by the industry as good operating practice and has been indoctrinated into law by the courts as a reasonable operating rule.

"Increasingly more wells are reinjecting salt water so that today we are reinjecting 270,000 barrels daily. Three more injection wells are in preparation and each should handle 10,000 barrels of water daily. By the end of December we will be returning 300,000 barrels of water daily.

"It is significant that total fluid withdrawal in East Texas is 608,000 barrels per day which is well within the 650,000 barrels daily fluid withdrawal limit. So it stands to reason that the bottom-hole pressures should rise in the future either this month or next.

"Another series of vigorous checking is now started in the field. A tank is hauled to the well and actual check on the water-oil ratio is made by the commission inspectors to insure accuracy in reports at each well making substantial amounts of water.

"We think this will get the job done and furnish the oil needed with no waste of reservoir pressure. If it does not do the job then other means will be taken to get oil that will be needed and as needed for the war effort.

"It is possible that the water-oil ratio of five to one may prove to be too liberal.

"One thing is certain. We have found the proper technical and sound legal way to maintain reservoir pressure.

"In water-drive fields it is by prescribing a proper water-oil ratio. In gas-drive fields by prescribing a proper gas-oil ratio.

"The state-wide gas-oil ratio is 2000 cubic feet of gas to 1 barrel of oil or a 2 to 1 ratio. It has proved successful in both cases."

PIWC Sees Further Losses of Field Workers

Pooling of personnel by producers to combat a "creeping manpower crisis" in the oil industry was urged by PIWC Chairman William R. Boyd, Jr., November 24.

Boyd explained that this method of meeting the problem had been adopted by the council in an effort to meet an anticipated 85 percent loss of men of military age within the next year.

A serious shortage of pumpers and other field workers already exists, he said, pointing out that since many of these jobs cannot be classified as critical or essential under current War Manpower Commission policies it is up to the industry to deal with the question in other ways.

"The loss of manpower from various branches of the industry is becoming more serious each day, particularly in the case of technical and supervisory personnel," he said. "Moreover, the withdrawal of employees by Selective Service will be sharply accelerated in the near future when men with dependents are inducted into the armed services. Within the next year the industry may have to experience the loss of as many as 85 percent of their men between the ages of 18 and 38. At the same time, other war industries may continue to draw on workers from the petroleum industry as available labor of all categories becomes increasingly scarce. There is a manpower problem in every branch of the industry and this problem is becoming progressively acute."

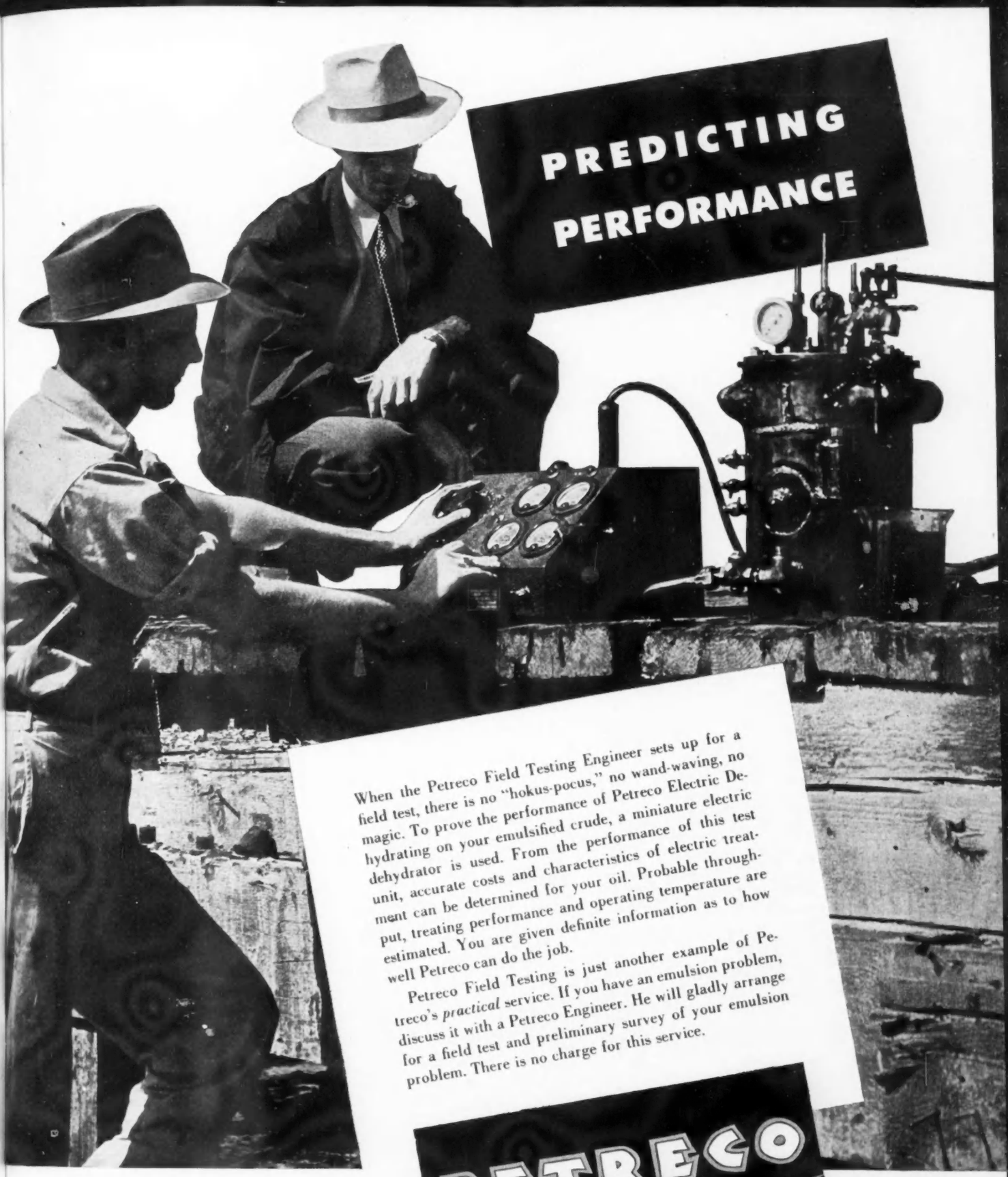
To meet the needs of the production branch, it is estimated that 35,000 new employees will have to be recruited next year, 15,000 of them to replace present employees, 13,000 for drilling, 2000 for exploration and 5000 for miscellaneous field activities.

"We are faced with the need of finding and developing more new oil fields and extending production from old fields through rehabilitation and secondary-recovery programs," Boyd pointed out. "We are reasonably assured of the materials needed for expanding activity but we have no assurance whatsoever with respect to manpower."

Committees to Confer on Oklahoma Proration Laws

A three-day session is scheduled for November 29, 30 and December 1 on a program of analysis and proposals to revise Oklahoma proration statutes. The general committee of operators has W. A. Delaney, Jr., as its head, with E. G. DeParade as vice chairman and Lawrence R. Alley as secretary.

E. G. DeParade is chairman of the coordinating committee, Alvin Richards is temporary chairman of the legal advisory committee, Wm. T. Payne is temporary chairman of the committee on drilling and development, and R. B. Curran is temporary chairman of the committee on production methods. The committee on gas production is headed by D. C. Bothwell as temporary chairman, while the committee on secondary recovery and salt-water disposal is under the direction of Jack Abernathy. M. M. Tripplehorn is temporary chairman of the committee on plugging and abandoning of wells, while the committee on oil transportation and purchasing is headed temporarily by J. K. McGoldrick as chairman.



When the Petreco Field Testing Engineer sets up for a field test, there is no "hokus-pocus," no wand-waving, no magic. To prove the performance of Petreco Electric Dehydrating on your emulsified crude, a miniature electric dehydrator is used. From the performance of this test unit, accurate costs and characteristics of electric treatment can be determined for your oil. Probable throughput, treating performance and operating temperature are estimated. You are given definite information as to how well Petreco can do the job.

Petreco Field Testing is just another example of Petreco's *practical* service. If you have an emulsion problem, discuss it with a Petreco Engineer. He will gladly arrange for a field test and preliminary survey of your emulsion problem. There is no charge for this service.

PETRECO

DEHYDRATING **DESALTING**

COMPLETE REFINERY AND OIL FIELD SERVICE

PETROLEUM RECTIFYING COMPANY
530 W. SIXTH ST., LOS ANGELES 14, CALIF.
P. O. BOX 2546, HOUSTON 1, TEXAS
648 EDISON BUILDING, TOLEDO 4, OHIO
Representatives in all principal fields and refining centers.

PIPE LINE REVIEW

Big-Inch Line Schedule Arranged Through February

Schedules calling for the movement of 9,517,000 barrels of crude oil through the Big-Inch pipe line during December and, tentatively, 8,990,000 barrels in January and 8,410,000 barrels in February, have been issued by the PAW transportation division.

The schedule calls for the movement of 4,650,000 barrels of East Texas oil, 1,550,000 barrels of Southwest Texas and 3,317,000 barrels of West Texas during December; 4,340,000 barrels of East Texas, 1,550,000 barrels of Southwest Texas and 3,100,000 barrels of West Texas during January, and 4,060,000 barrels of East Texas, 1,450,000 barrels of Southwest Texas and 2,900,000 barrels of West Texas during February.

Deliveries and sales to War Emergency Pipelines, Incorporated, at Longview are to be made as follows:

December: East Texas oil: Atlantic Refining Company, 551,800 barrels; Central Pipe Line Company, 31,000 barrels; Cities Service Oil Company, 341,000 barrels; Gulf Refining Company, 65,000 barrels; Humble Oil & Refining Company, 998,200 barrels; Magnolia Petroleum Company, 139,500 barrels; Pure Oil Company, 248,000 barrels; Shell Oil Company, 437,100 barrels; Sinclair Prairie Oil Marketing Company, 294,500 barrels; Sun Oil Company, 961,000 barrels; Tide Water Associated Oil Company, 582,800 barrels; Southwest Texas: Atlantic, 303,800 barrels; Globe Oil & Refining Company, 62,000 barrels; Houston Oil Company, 43,400 barrels; Humble, 775,000 barrels; Magnolia, 248,000 barrels; Sun, 117,800 barrels; West Texas: Atlantic, 1,085,000 barrels; Gulf, 217,000 barrels; Humble, 2,015,000 barrels.

January: East Texas: Atlantic, 558,000 barrels; Central, 31,000 barrels; Gulf, 65,100 barrels; Humble, 1,001,300 barrels; Magnolia, 142,600 barrels; Pure, 248,000 barrels; Shell, 440,200 barrels; Sinclair, 297,600 barrels; Sun, 967,200 barrels; Tide Water, 589,000 barrels; Southwest Texas; Globe, 365,800 barrels; Houston, 43,400 barrels; Humble, 775,000 barrels; Magnolia, 248,000 barrels; Sun, 117,800 barrels; West Texas: Atlantic, 1,085,000 barrels; Humble, 2,015,000 barrels.

February; East Texas: Atlantic, 522,000 barrels; Central, 29,000 barrels; Gulf, 60,900 barrels; Humble, 936,700 barrels; Magnolia, 133,400 barrels; Pure 232,000 barrels; Shell, 411,800 barrels; Sinclair, 278,400 barrels; Sun, 904,800 barrels; Tide Water, 551,000 barrels; Southwest Texas: Globe, 342,200 barrels; Houston, 40,600 barrels; Humble, 725,000 barrels; Magnolia, 232,000 barrels; Sun, 110,200 barrels; West Texas: Atlantic, 1,015,000 barrels; Humble, 1,855,000 barrels.

Standard of Ohio Sells Interest in Michigan Line

Standard Oil Company of Ohio has sold its half interest in Simrall Corporation, Central Michigan purchasing and gathering company, to C. L. Maguire and associates, who previously controlled the balance of the stock in the company. Standard bought a half interest in the company in 1935 as part of the deal that resulted in the building of a 160-mile 8-inch pipe line from Mt. Pleasant to Toledo, Ohio. Earlier this year Maguire and Simrall brought suit against Standard charging violation of contracts involving sales of crude to Standard purchased by the pipe-line company and alleged agreements that Standard would not compete against Simrall in Central Michigan as a crude-oil buyer. The suit will be dismissed as a result of the sale.

Claims for Transportation Adjustments Being Made

Secretary of Commerce Jesse Jones announced November 24 that up to October 31, Defense Supplies Corporation had paid out $230,338,447 on claims of oil companies for compensatory adjustments in connection with the transportation of oil and products to the East Coast, and had received $128,511,306.64 from the Trustee of the plan for the equitable sharing of revenues and extra transportation expenses in part reimbursement.

UNIFORMITY, DEPENDABILITY, HIGH QUALITY . . . THESE ARE THE FEATURES THAT MAKE J-M SERVICE SHEET THE NO. 1 SHEET PACKING FOR INDUSTRY

More and more engineers are safeguarding gasket performance by switching to J-M Service Sheet. Basically asbestos, this tough material not only stands up longer, but is completely uniform, both in density and quality. Because it does not deteriorate with age, it can be kept in stock indefinitely.

If you're not already using J-M Service Sheet, it will pay you to investigate. And if you have any other packing problems, you'll find an efficient, economical solution in the balance of the complete J-M line. For details, write for the J-M Packing Catalog, PK-12A. Johns-Manville, 22 East 40th Street, New York 16, N. Y.

With virtually the entire production of J-M Packings and Gaskets needed for war, delivery on other than high-priority orders may be slower than in normal times. However, through increased capacity and round-the-clock production, every step is being taken to assure the fastest delivery possible during the present emergency.

JM

Johns-Manville PACKINGS & GASKETS

THERE'S A DISTRIBUTOR NEAR YOU

Difficulty Met in All Districts In Supplying Demand for Oils

Although markets continue generally tight, with supplies everywhere low in relation to demand, there is now a relatively more favorable distribution of stocks, and the East Coast in particular is benefiting from this improved situation.

(Tank car shipments to District 1 in averaging 763,383 barrels per day during the week ended November 20 were up 5252 barrels daily from the previous week, although the American Petroleum Institute indices of District 1 inventories for November 20 were: gasoline 39.5 percent of normal, kerosine 52.3 percent, gasoil and distillate fuel 64.2 percent, and residual fuel oil 76.3 percent of normal).

East Coast suppliers in most instances indicate better positions on gasoline inventories, in relation to current curtailed demand, although supplies of kerosine in the region are uncomfortably low, as demand continues heavy.

This tight situation of kerosine in the East is a reflection of an even more pronounced shortage of that product on the Gulf Coast, where refiners expect the situation to become worse rather than better during the next several weeks. Gulf Coast refiners' supplies of Bunker C fuel oil also are extremely limited.

In the Western Pennsylvania refining district all materials are scarce. Gasoline is in strong demand, and stocks are low, while neutral oils are increasingly difficult to obtain.

Supplies of all products are comparatively low in the Middle West, and refiners' receipts of crude are not adequate to assure full utilization of plant capacity. Consequently, some refiners in the Chicago area are contemplating the use of some sour crude to supplement their allocations of sweet crude, although receipts of the sour oil are being delayed pending approval of compensation for extra transportation costs. So far, Michigan refiners have been able to meet demand fairly well from their available supplies of sweet crude. While refiners' stocks of domestic fuels are low in relation to prospective demand, the stocks at Great Lakes water terminals are reported to be more adequate than in former years. Gasoline is generally scarce throughout the Middle West, in spite of the reduction of coupon values. Lubricating oils are in strong demand, and inventories of bright stocks are short, although supplies of neutrals are quite adequate.

Mid-Continent refiners are encountering exceptionally strong demand for burning oils, kerosine, and heavy fuel oils used by the railroads. Some Oklahoma-Kansas refiners currently are a week or 10 days behind in filling orders for heating oils, and some plant owners are unwilling to guarantee shipment of range oil and kerosine within less than a month. Residual fuel oil is being

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED November 27	November 20
Arkansas	78,350	78,550
California	800,050	788,900
Long Beach	30,600	30,500
Midway-Sunset	55,150	56,100
Kettleman Hills	41,000	41,100
Wilmington	98,400	93,100
Rest of State	574,900	568,100
Colorado	7,450	7,300
Illinois	219,050	214,300
Salem	27,550	28,100
Louden	34,800	35,900
Other New Pools	144,300	137,650
Old Pools	12,400	12,650
Indiana	12,500	13,150
Kansas	273,200	281,300
Kentucky	23,350	22,350
Louisiana	351,100	350,950
North	78,750	78,650
South	272,350	272,300
Michigan	50,150	60,600
Mississippi	49,350	46,600
Missouri	95	95
Montana	21,500	21,598
Nebraska	1,700	1,700
New Mexico	113,050	112,700
New York	13,550	13,900
Ohio	10,000	9,000
Oklahoma	325,800	326,650
Oklahoma City	50,700	51,300
Seminole Area	72,400	73,100
Rest of State	202,700	202,250
Pennsylvania	39,550	40,100
Tennessee	35	35
Texas	1,929,400	1,924,550
Upper Gulf Coast	524,550	524,550
East Texas Field	376,500	376,500
Rest of Eastern Texas	143,000	138,050
Lower Gulf Coast	197,350	197,600
Southwest Texas	80,100	80,200
South Central Texas	20,700	20,750
West Texas	359,800	359,700
North Texas	141,800	141,800
Panhandle	85,600	85,400
Utah	10	10
West Virginia	8,000	8,000
Wyoming	100,850	100,950
Total United States	4,428,090	4,423,288

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Week Ended	Runs to Stills Barrels Daily	Week Ended	Crude Stocks Barrels	Week Ended	Gasoline Stocks Barrels	Week Ended	Gas Oil & Distillate Stocks Barrels	Week Ended	Residual Fuel Oil Stocks Barrels	Week Ended
Highs:												
1939	3,910	8– 5	3,650	10–21	278,607	5–26	87,769	4–22	39,562	10–28	116,237	8–26
1940	3,890	3–16	3,690	6–22	265,865	8–31	102,817	4–20	49,051	10–19	109,135	9–14
1941	4,337	11–22	4,120	10–18	266,187	3–29	99,727	3–29	[1]54,983	11–15	102,448	1– 4
1942	4,337	2– 7	3,961	1– 3	263,208	3–28	[1]109,281	3–14	49,861	11–14	95,857	1– 3
1943	[1]4,412	10–16	[1]4,227	8–28	245,752	5–29	94,159	3–20	45,772	11–20	72,881	1– 2
Lows:												
1939	[3]1,601	8–26	3,125	2–18	[2]229,127	10–12	71,152	10– 7	20,722	4–15	105,397	4– 8
1940	3,335	11–30	3,370	1– 6	237,339	1–27	79,847	11– 9	23,551	4– 6	102,344	2–10
1941	3,364	1–11	3,490	1–18	240,399	11–15	79,923	10– 4	28,381	4–12	90,914	7–12
1942	3,297	7– 4	3,393	5–23	231,896	12–12	75,934	12– 5	29,240	4–25	72,962	12–26
1943	3,821	1– 9	3,579	3–13	232,191	1– 9	68,182	10–16	30,732	4– 3	65,518	10–16

TRENDS OF 1942 AND 1943

Trends in Week Ended:	Crude Oil Production Daily	Runs to Stills Daily	Stocks Week End	Gasoline Production Weekly	Stocks Week End	Gas Oil X Distillate Production Weekly	Stocks Week End	Residual Fuel Production Weekly	Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	3,799	34,547	6,813	88,285
March 28	3,820	3,667	263,208	11,663	105,624	3,661	31,756	6,344	83,045
April 25	3,581	3,506	257,073	10,535	102,897	3,267	29,240	6,869	81,107
May 30	3,877	3,522	255,023	10,478	95,355	3,034	31,384	6,993	79,628
June 27	3,719	3,581	253,304	10,713	88,396	3,549	32,851	6,615	77,304
July 25	3,691	3,658	249,262	10,864	82,281	3,647	35,966	6,796	77,816
August 29	3,964	3,697	249,007	11,300	80,831	3,850	42,060	6,875	78,034
September 26	3,909	3,802	242,785	10,954	80,550	4,215	45,954	7,094	78,943
October 31	3,901	3,731	239,266	11,153	79,159	.....	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.....	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	4,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	[4]4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	237,219	12,813	69,297	4,642	44,591	7,968	63,838
November 6	4,389	4,079	236,937	12,172	68,698	4,287	44,776	8,135	63,551
November 13	[4]4,436	4,134	238,404	12,223	68,610	4,633	45,518	8,103	62,647
Nov. 20 1943	**4,414**	**4,192**	.....	**12,488**	**68,996**	**4,643**	**45,772**	**8,797**	**62,662**
Nov. 21, 1942	3,912	3,731	[4]235,262	11,482	74,745	4,098	50,085	7,306	77,796
Change:									
In week	—22	+58	+1,467	+265	+386	+10	+254	+694	+15
In year	+502	+461	+3,142	+1,006	—5,749	+545	—4,313	+1,491	—15,134
In year	+12.8%	+12.4%	+1.3%	+8.8%	—7.7%	+13.3%	—8.6%	+20.4%	—19.5%

[1] All time peak [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, November 14, 1942

Secondary Recovery Provides MORE OIL FOR WAR

Complete practical experienced engineering service, including:

Preliminary Surveys	Water Treating Plants
Gas Measurements	Compressor Plants
Bottom-Hole Pressure	Estimate of Results
Coring Equipment	Supervision
Core Analysis	Installation
	Operation

We invite your inquiries and would like to cite you references and show you actual performance records.

PETROLEUM ENGINEER
JO H CABLE
WICHITA FALLS TEXAS

"Now, if we were only staying at THE ROOSEVELT"

When you stop at The Roosevelt you don't risk getting marooned like this. For you'll be within walking range of Manhattan's Midtown activities. Direct passageway from Grand Central Terminal to hotel lobby. A reservation at The Roosevelt liquidates a lot of bother. *Rooms with bath from $4.50.*

THE ROOSEVELT
Robert P. Williford, General Manager
MADISON AVE. AT 45th ST., NEW YORK
—A Hilton Hotel—
OTHER HILTON HOTELS FROM COAST TO COAST:
TEXAS, Abilene, El Paso, Longview, Lubbock, Plainview; NEW MEXICO, Albuquerque; CALIFORNIA, Long Beach, Los Angeles, *The Town House*; MEXICO, Chihuahua, *The Palacio Hilton*. Hilton Hotels. C. N. Hilton, President.

taken by the railroads in large volumes, and many refineries have no surplus supplies for meeting that strong demand, being able to take advantage of it only to the extent of their current production. Asphalt is about the only product meeting less active demand in the district than heretofore.

Operations Near Record Levels; Stocks Increased

The industry maintained near-record production and processing of crude oil in the week ended November 20, latest statistics of the American Petroleum Institute showed, with the result that there were increases in refinery output of all the major petroleum products and additions to the stocks of those refined oils. National inventories of gasoline were increased 386,000 barrels and those of gasoil and distillate fuel 254,000 barrels, although the stocks of residual fuel were enlarged only 15,000 barrels.

In averaging 4,414,000 barrels per day in the week of November 20, United States crude oil production was down only 22,000 barrels from the all-time peak established in the previous week and it was 502,000 barrels or 12.8 percent higher than in the week ended November 21 last year. Texas now is producing about 550,000 barrels a day more than a year ago, Louisiana 25,000 barrels more, New Mexico 17,000 a day more, and California 50,000 more. But there have been declines in daily output since a year ago amounting to about 40,000 barrels in Oklahoma, 30,000 in Kansas, 17,000 in Mississippi, and 50,000 in Illinois.

Crude runs to stills in the United States averaged 4,192,000 barrels per day in the week of November 20, up 58,000 from the week before and within 35,000 barrels of the all-time peak reached in late August this year. The runs were 461,000 barrels a day or 12.4 percent higher than in the week ended November 21, 1942. They represented the use of 86.9 percent of the nation's rated refining capacity of 4,827,000 barrels daily. Plants of the East Coast and Southwestern districts in the aggregate processed 2,164,000 barrels daily, having used 88.5 percent of their 2,444,000 barrels of potential capacity. The Middle West operated at 89 percent of capacity, Oklahoma-Kansas at 84 percent, Rocky Mountains at more than 65 percent, and California at 85 percent in processing 696,000 barrels of crude per day.

Production of gasoline in the United States in amounting to 12,488,000 barrels during the week of November 20 was 265,000 barrels larger than in the previous week and 1,006,000 barrels or 8.8 percent greater than in the like week of 1942. Stocks of finished and unfinished gasoline were increased 386,000 barrels during the November 20 week to a total of 68,996,000 barrels, which was, however, 5,749,000 barrels or 7.7 percent less than the 74,745,000 barrels held November 21 last year.

Although the production of gasoil and distillate fuel amounting to 4,643,000 barrels in the week ended November 20 was but 10,000 barrels more than that in the previous week, it was 545,000 barrels or 13.3 percent more than the 4,098,000 barrels produced in the corresponding week last year. It was possible to add 254,000 barrels to stocks during the 7 days, increasing inventories to 45,772,000 barrels, although that quantity was 4,313,000 barrels or 8.6 percent less than the 50,085,000 barrels in storage at this time last year.

The 8,797,000 barrels of residual fuel oil production in the week of November 20 was 694,000 barrels more than that in the previous week and 1,491,000 barrels or 20.4 percent more than the 7,306,000 barrels of refinery output in the like week last year. In spite of comparatively large production, however, it was possible to add only 15,000 barrels of residual fuel to storage, and the stocks of 62,662,000 barrels on hand November 20 were 15,134,000 barrels or 19.5 percent less than the 77,796,000-barrel inventory on hand November 21 last year.

C. A. Fulton Elected President of AIME

Chester A. Fulton, president of the Southern Phosphate Corporation of Baltimore, Maryland, was elected president of the American Institute of Mining and Metallurgical Engineers for 1944. Twelve thousand members balloted by letter, according to a report of the tellers made at a meeting of the board of directors of the Institute.

Two vice presidents were elected: John L. Christie of Handy and Harmon, Bridgeport, Connecticut, and J. Robert Van Pelt, Jr., of the Museum of Science and Industry, Chicago. Six directors were also elected: Milton H. Fies, De Bardeleben Coal Corporation, Birmingham, Alabama; H. T. Hamilton, The New York Trust Company, New York City; J. C. Kinnear, Kennecott Copper Corporation, McGill, Nevada; Wallace E. Pratt, Standard Oil Company (New Jersey), New York, John R. Suman, Humble Oil & Refining Company, Houston, and Robert W. Thomas, Nevada Consolidated Copper Corporation, Ray, Arizona.

Fulton, the sixty-first president of the institute in the 72 years of its existence, will be formally inducted into office at the annual meeting to be held in New York in February.

Petroleum Accountants Meet in Tulsa

The November meeting of the Petroleum Accountants Society of Oklahoma was held on November 24 in Tulsa, with J. B. Gilbraith in charge. The program consisted of an address "Up from Every Mountain Side" by Roscoe Adams, cashier of the First National Bank and Trust Company of Tulsa, and an address on "Pipe Line Valuation Accounting Problems Under the Consent Decree" by J. L. Shoemaker, auditor of Stanolind Pipe Line Company. An open forum discussion followed. Moving pictures of the construction of the Big Inch pipeline were shown with a commentary by W. H. Stueve of the Oklahoma Gas and Electric Company.

Oklahoma Allowable Hearing November 30

Oklahoma Corporation Commission has set November 30 to hear producers and purchasers on the December allowables. In addition, well spacing at West Loco, gas allocation in the Medrano sand of West Cement and the Lower Charlson Chickasha pool, and the subject of potentials for Class B pools will be the subject of a hearing.

U. S. Field Operations

Illinois

Six Discoveries Made As Operations Increase

A continued rise in operations, a prospective pool opener and completion of six discoveries, highlighted activity in the Illinois oil basin this week.

Operations in the state totaled 269, an increase of 11 from last week and the highest total since February 10, this year. First reports totaled 53 of which 9 were wildcats. A total of 55 wildcat operations was recorded.

Twenty-seven producing wells, including 6 wildcats, were completed for total initial production of 4249 barrels of oil. Fifteen holes were dry. The Mt. Carmel pool of Wabash County remained the most active with 35 operations.

Wayne County: The prospective pool opener was Robinson & Pucket's Gordon-Muhlbach 1, in 1-1n-8e, 2 miles from production in the Clay City pool. The well, on a drill-stem test at 3080-3128 feet, made 1565 feet of oil, 180 feet of oil-cut mud and 30 feet of water. Pipe was set to 3111 feet.

Collins Brothers' Weir 1, NW SW SE 27-1s-8e, 2 miles north of Fairfield, was opening a new pay zone in a productive area in the McClosky lime. Pay was found at 3152-58 feet and 3162-64 feet. On a one-hour drill stem test, the well yielded gas in 3 minutes and flowed oil in 13 minutes. Casing was set at the bottom of the hole for test.

The Texas Company's Hoffee 1, NE NE NE 9-1n-6e, 2 miles north of Johnsonville, was named the discovery of the Johnsonville pool upon completion this week. The well pumped 140 barrels of oil in initial test from Lower O'Hara lime and McClosky lime at 3254-57 and 3092-97 feet after 3000 gallons of acid. Total depth was 3322 feet.

Jefferson County: J. W. Murchison may open a new pool with Sledge 1, SE SE SE 34-3s-2e, 2 miles north of Nason. On a drill-stem test of Rosiclare, the well showed 500 fet of gas and 60 feet of oil-cut mud from pay at 2783-96 feet.

Fayette County: J. J. Callahan and associates have completed Littleton 1, NE SW 22-5n-4e, as the discovery well in the Farina pool. The well fell short of earlier expectations when it was completed on pump for 27 barrels of oil and 63 barrels of water from Benoist sand at 2343-59 feet, the latter figure total depth.

Edwards County: Superior Oil Company listed two wildcats as completions this week. They were Lipper 1, NW NE SE 28-1s-14w, which was named discovery of the Brown pool and Jack 1, SE SE SW 5-2s-14w, recorded as an extension of the Albion pool. Lipper 1, pumped 209 barrels of oil and 34 barrels of water from Cypress sand at 2700-25 feet after a 60-quart shot, while Jack 1, pumped 16 barrels of oil and 34 barrels of water from Benoist sand after a 60-quart shot in pay at 2845-60 feet.

The Albion pool was given another official extension by Whisenant & Trenchard's Dunk 1, NE SE SE 26-2s-10e, more than a mile from production. The well made 15 barrels of oil and 55 barrels of water from Waltersburg sand after a shot virtually ruined the hole. An offset swabbed approximately 200 barrels daily from the same pay formation.

White County: C. E. Skiles' Hoerner 1, E½ NW NE 25-3s-10e, was completed as an extension of the Calvin pool after pumping 65 barrels in 24 hours from Benoist sand at 2924-34 feet after a 20-quart shot. Total depth of the hole was 2978 feet.

Shelby County: The Texas Company's wildcat Ferguson 1, NW SW NE 18-11n-6e, 3 miles southeast of Windsor, cored Rosiclare without success and was preparing to drill ahead. The well probably will be taken to the Devonian lime.

In a northern extension attempt for the Stewardson pool, Yakey & Powell's Scheef 1, SE SE SW 22-10n-5e, found 4 feet of saturation in Aux Vases sand near 1900 feet and is preparing to test.

Coles County: K. W. Kilpatrick, Mattoon, has staked location for the fourth wildcat in the area south of Mattoon in the last five weeks. The well is Elmo Morris 1, NE SE NE 27-11n-7e and tools are now being moved to the location. Carter Oil Company has much acreage near the site.

Indiana

Posey County Pool Opener Appears Good

A pool opener in Posey County appeared in prospect this week at Bennett Brothers Spencer 1, NE SE SW 32-6s-14w, 6 miles north of Mt. Vernon. The well on a one-hour drill stem test of Tar Springs sand at 2142-49 feet, filled with 1463 feet of oil and 25 feet of oil-cut mud. The well made gas in 12 minutes.

Tippecanoe County: Two wildcat wells on a 6000-acre block assembled in 1941 were attracting attention in Indiana this week. The first was Arthur Wolfe's Wolfe 1, NE NW SE 10-24n-3w, which was drilling below 270 feet with cable tools after finding saturation in Devonian lime at 80 and 160 feet. The second was Mile Ritchie's Dubes 1, SE SW 22-24n-3w, which is drilling below 350 feet. It also found Devonian saturation. The wells are scheduled to test Trenton lime expected at 1100 feet.

Pennsylvania

Horizontal Well Test Waits Cleanout After Shot

Venango Development Corporation's horizontal well installation at Two Mile Run, near Franklin, Pennsylvania, was shot late Thanksgiving Day. It will be a couple of days before the 429-foot mine shaft can be cleared of gas and debris. The two horizontal wells that were shot extend 2350 feet from the shaft through oil-bearing sands.

Kansas

New Viola Lime Pool Near Lindsborg

A new Viola lime field has been found at Margay Oil Corporation's Anderson 1, C NW SW 3-16-3w, which is incomplete with hole at 3505 feet in the Simpson section. Location of the wildcat is in southern Saline County, only a short distance northeast of Olsson field, discovered some years ago and abandoned when it proved noncommercial. The discovery is also on a direct trend from the active Lindsborg area which now includes 88 producers and is yet to be defined on all sides.

When given first test through perforations in Viola lime at 3367 to 3379 feet, the well made 1400 feet of oil into the casing in 24 hours.

Nemaha County: Ohio Oil Company's Lamporter 1, C NE SW 3-2s-14e, in the northeast corner of the state just south of the Nebraska production in Richardson County, which found heavy oil in Hunton lime at 2826 feet, is a fishing job with drill pipe lost. Well has been deepened to 3307 feet with Arbuckle lime the lower objective.

Graham County: Another location on the probable extension of Central Kansas Uplift into the northwest corner of the state has been made by Davis-Child Motor Company as Scott 1, NEC NW 7-7-22w, with H. M. Williams doing the operation. Well will go to Arbuckle lime, expected at 4000 feet. Penoke and Gettysburgh fields are nearest production to the south and west. Neither of the latter has been developed.

Barton County: Cities Service Oil Company's Eveleigh 1, NE NE SE 11-18-14w, is a wildcat that has found slight showing in conglomerate at 3299 to 3316 feet. The section is being tested.

Oklahoma

Misener Sand Produces In Payne County Wildcat

A new Misener field has been found in the Ingalls area of Payne County, in the vicinity of other production from both deeper and more shallow strata. The wildcat is Crosbie, Incorporated's, Myatt 1, C NE SW 25-19-4e, which drilled to 3774 feet in Viola lime and ran pipe into the pay. Casing was perforated between 3650 and 3756 feet in Misener sand drilled from 3731 to 3761 feet. On casing test, the well flowed 223 barrels of 44-gravity oil in 1½ hours with an estimated 5,000,000 feet of wet gas.

Noble County: Northeast Liberty field, productive in one well completed in Wilcox sand by Deep Rock Oil Corporation's Daily 1, may receive a second producer despite the unsuccessful tries located in the immediate vicinity of the single producer. Ptak Petroleum Company's Veronneau 1-A, NW SE NE 10-22-2e, southeast of the discovery, had shows in Wilcox sand but before the well could be completed or given a

satisfactory test, it caught fire and the rig will have to be rebuilt. As a result of offsetting dry holes, it had previously been concluded that Northeast Liberty was another of the one-well pools of the area.

Oklahoma County: The south edge of West Edmond field is receiving major attention due to finding thick sections of Hunton lime that appear well saturated. One of the last is Fox and Schmidt's Wagner 3, CSW SW 32-14-4w, which was killed after blowing wild for 12 hours when it went out of control during a tubing run.

Logan County: A new Layton sand field appears in the making at Gulf Oil Corporation's Pritchard 1, CNW NW 22-17-3w, which drilled dry Wilcox sand at 6330 feet and backed up to 4770 feet. The test drilled in the upper bench of the Layton sand at 4698 to 4717 and the lower from 4740 to 4766 feet. On swab test in the lower section made 4½ barrels hourly with a shut-in pressure of 450 pounds. Ground is being leveled for tankage, and pipe has been run.

West Texas

Pecos County Has Shallow Ordovician Oil Production

Shallowest Ordovician production in the Permian Basin marked the opening of the Owego prospect, Northeastern Pecos County, by Bryce McCandless et al's Cordova-Union Oil Corporation 1-101, in making a small flowing well from Ellenburger, topped at 4005 feet. This wildcat flowed 27, 15 and 10 barrels of 35.4-gravity oil with negligible volume of gas on 3-hour test through 24/64-inch choke after using 2000 gallons of acid through perforations at 4012-37 feet, having plugged back from flowing sulphur water at 4103 feet. It is 7¼ miles northwest of the Wentz pool, nearest Ordovician production, and is within a trend of production that is influenced by underlying granite mountains. The strike is on acreage farmed out by Gulf Oil Corporation, and was supported by nearby lease owners.

Upton County: Texas Pacific Coal & Oil Company's Lane 52-A, recent Silurian discovery for the McCamey field, flowed an average of 14.7 barrels of 43.8-gravity sweet oil hourly on 33-hour test after acid treatment of perforations in saturated lime section at 7125-7200 feet. Gas-oil ration calculated at 1500/1. Official test is pending. It is 41 miles southeast of the Shipley two-well deep area, which was only source of Silurian production in Texas. Lane 52-A occupies the apex of the McCamey structure, and flowed water from Ellenburger, topped at 8195 feet. The cost of drilling the Devonian chert section between 6450 and 7065 feet, with varying degree of hardness, is estimated at $20,000.

Hockley County: Woodley Petroleum Company's Harless-Stanolind 1, first Clear Fork discovery for the county, scored gain in oil yield without appreciable increase of water in deepening from 5955 feet to 5990 feet. Swabbing test at 5980 feet yielded 105 barrels of oil, averaging 1 percent water, including accumulation, on 8-hour run. It will be deepened to the main water table, or commercial production.

Winkler County: Magnolia Petroleum Company's Walton-State 21, ¾-mile southeast of its Kermit-Ellenburger deep strike, was drilling after recovering 180 feet of mud with tester in Silurian at 8801-8940 feet. This outpost entered Devonian chert at 8220 feet and top of Silurian at 8760 feet, being 90 feet and 25 feet high, respectively, on these markers.

Wildcat Starts: Seven prospects listed the past week include 2 regular Permian projects for Yoakum County, and a scheduled 7500-foot, or Ellenburger try for Irion County by Shell Oil Company. In the latter county, Humble Oil & Refining Company's Sawyer 2-B was drilling shaley-lime at 5720 feet, and in Sterling County, Phillips Petroleum Company's Sterling-Glass 1 was drilling Pennsylvanian shale at 9070 feet.

Andrews County: The Texas Company's Mabee 2, 5800 feet southwest of Mabee discovery, was making production test through tubing at 4746 feet in dry lime. Mabee 3 assured a 6500-foot east by north extension in averaging 4.8 barrels of fluid, 4 percent b.s. and ½ percent water, on 24-hour swabbing test at 4720 feet. This new producing area in the west portion of the Midland basin is lacking in gas within and above the oil zone.

Dawson County: Seaboard Oil Company's Spraberry 1 was coring at 6755 feet, having recovered 900 feet of rotary mud at 6598-6736 feet in the San Angelo-Clear Fork contact. The fine-grained sand carried oil odor and stain and indicated salty taste. Gulf Oil Corporation's Dean 1 developed a fishing job at 10,293 feet.

North Texas

Jack County Wildcat Making Mississippian Oil

Jack County has a wildcat in process of completion from Mississippian through Shell Oil Company's Pursley 1 having flowed oil and acid residue to indicate a 75- to 100-barrel producer. Broken saturation in Mississippian at 5443-5634 feet was acidized with 4000 gallons. This wildcat tested water in Ellenburger at 5822-6011 feet.

Hardeman County: Humble Oil & Refining Company's Dodson 1, which showed oil possibilities at several horizons in Strawn and Bend in drilling to 7301 feet, has failed to make a producer in plugging back to 6490-6522 feet, and will perforate higher.

Archer County: A. R. Dillard et al's Wilson-McCory 1-T, wildcat 7½ miles south of Mankins, proved dry in Mississippian and Ellenburger, topped at 5092 feet and 5181 feet, and was drilling dry dolomite at 5225 feet to establish water table before abandoning. G. E. Kadane & Sons have authorized 5 tests for the new Strawn oil area in the northwest part of the county that was recently opened by George W. Cooper and associates. Locations are immediately east and west of the discovery pumper.

Clay County: Shell Oil Company's Wynn 1, prospective Mississippian discovery 2 5/8 miles east of Stephens two-well pool, tested a small volume of oil and brackish water when swabbed down after using 1000 gallons of acid in Ellenburger at 6706-95 feet. It will be plugged back to a 261-foot section of Mississippian saturation, varying from good to fair and topped at 6174 feet. Continental Oil Company's Mayfield 1, south outpost for the Stephens pool, is due to be carried to Ordovician after yielding 5200 feet of salt water from Mississippian at 6098-6109 feet.

Cooke County: Magnolia Petroleum Company's McGeorge 4, northwest corner Section 66 and a south outpost for the Walnut Bend field's Winger sand area, became first failure for this prolific zone in yielding oil-cut mud and 300 feet of water at 5592-5612 feet, and was drilling at 5755 feet. Development of the Winger sand belt on a 40-acre pattern has about run its course, but operators are anticipating PAW approval after the first of the year for drilling of second well on all units having thick pay. Seitz-Comegys & Seitz et al's Blankenship 1, ¼-mile south of the partnership's oil discovery for the South Walnut Bend 4300-foot pay, entered dry Winger sand at 5556 feet, 4 feet low, and will plug back from 5614 feet to try for completion in a stray oil sand passed up at 4479-83 feet.

East Texas

Wood County Wildcat Has Favorable Structure

Gulf Oil Corporation's Brewer 1, Wood County wildcat, 2½ miles southwest of Winnsboro, confirmed its favorable structural position for the area in logging show of heavy oil in the Main Street sector of Georgetown at 5490-5680 feet, and was drilling lime at 5950 feet. Georgetown was topped at 5185 feet and Fort Worth lime at 5735 feet, with elevation of 479 feet.

Franklin County: Humble Oil & Refining Company's King 1, 2-mile northwest outpost for the New Hope dual-pay area, failed to indicate production in either the Rodessa or Travis Peak in drilling to 8243 feet, and is testing through perforations in Woodbine at 4600-20 feet before abandonment.

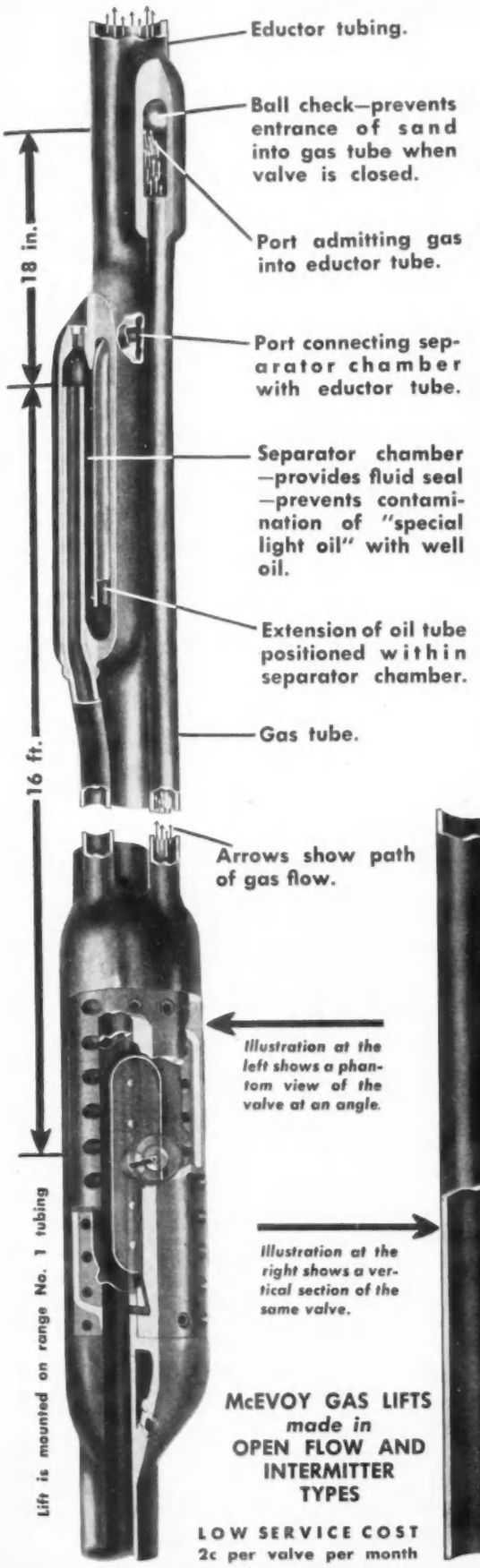
Smith County: Skelly Oil Company's Chisum 1, second prospect for the Sand Flat area which has been assured of Paluxy oil production, was drilling at 8485 feet, having logged first anhydrite at 8192 feet. Sun Oil Company's Patterson 1 has spudded, and Arkansas Fuel Oil Company has authorized drilling of Marsh 1, T. M. Hawkins survey.

Smackover Projects: Humble Oil & Refining Company's Rutherford 1, third Smackover lime failure for Hunt County, abandoned in schist at 7483 feet, having set pipe at 4790 feet for production test in Lower Glen Rose, which yielded small amount low-gravity oil with water, and also in Woodbine. The company's new Smackover prospect involves Norman 1, Hiram Thompson Survey and 1½ miles northwest of the above failure.

Manziel Pool: Shell Oil Company's Whatley 1, southeast outpost, was coring at 8245 feet with nominal oil odor and stain noted at intervals since passing out of massive anhydrite at 8062 feet with elevation of 461 feet. No drill-stem test made because of poor porosity.

Quitman Field: Magnolia Petroleum Company's White 1, Calderon Survey, registered a sharp dip in structure on the north edge of the field in entering Georgetown lime at 5170-80 feet, and was drilling lime at 5810 feet. The area is defined northeast and southeast, but is due to expand east and west.

McEVOY *Self-Operating* GAS LIFT


Eductor tubing.
Ball check—prevents entrance of sand into gas tube when valve is closed.
Port admitting gas into eductor tube.
Port connecting separator chamber with eductor tube.
Separator chamber —provides fluid seal —prevents contamination of "special light oil" with well oil.
Extension of oil tube positioned within separator chamber.
Gas tube.
18 in.
16 ft.
Arrows show path of gas flow.
Illustration at the left shows a phantom view of the valve at an angle.
Illustration at the right shows a vertical section of the same valve.
Lift is mounted on range No. 1 tubing
"Special light oil" tube.
Gas lift body.
Port conducting "special light oil" to back side of diaphragm.
Orifice admitting gas from casing annulus.
Orifice pin (valve).
Diaphragm assembly.
Port permitting entrance of well fluid to front side of diaphragm.
Sump.

McEVOY *Self Operating* GAS LIFT

Counter-Hydrostatic Principle . . . valves open and close in synchronization with the well flowing characteristics

Results: More fluid recovered • Lower gas-oil ratio • Lower Production costs
Proven low maintenance costs

The lift utilizes the principle that a column composed of a mixture of gas and fluid is "lighter" than an equal column composed only of fluid. These two columns are located in the tubing and in the "oil tube," respectively. The first is the column of well oil fluid in the eductor tubing—the second is the "oil tube" column which forms part of the gas lift and is filled with special fluid before running tubing. The hydrostatic pressures exerted by these columns act upon opposite faces of the diaphragm which, in turn, automatically controls the gas inlet valve.

As each valve is uncovered by the downward movement of the fluid in the casing annulus, the valve immediately above is closed by the aerated column created by the gas admitted into the tubing through the lower valve. Gas is always admitted through the lowest uncovered valve.

With the McEvoy Self-Operating Gas Lift you don't have to close the valve when the fluid above it has been lifted. It closes automatically when the input activating gas begins to operate through the next valve below.

McEVOY GAS LIFTS *made in* OPEN FLOW AND INTERMITTER TYPES

LOW SERVICE COST
2c per valve per month

The Army-Navy "E" proudly flies over the McEvoy Plant . . . having been awarded to the people of McEvoy Company for high achievement in the production of war products.

Write for new '43-'44 Catalog.

ARMY E NAVY
SERVING THE OIL INDUSTRY SINCE 1906

McEVOY COMPANY

TEXAS AT MILBY — HOUSTON, TEXAS

Southwest Texas

Bee County Well Appears Important Extension

Wildcatting and field development continue to show improvement in the lower coastal area and Southwest Texas. One of the most important extensions in the area is indicated in Magnolia Petroleum Company's Ingram 1, James Richardson Survey, Bee County, 2 miles southwest of Burnell-Wilcox condensate discovery. A drill-stem test at 6811-14 feet recovered 1100 feet of oil and 140 feet of mud and water in 23 minutes. Another drill-stem test in the Carrizo-Wilcox sand at 6654-60 feet had 34 feet of condensate and a small amount of mud in 15 minutes. A third test in Luling sand at 6762-74 feet developed 800 pounds pressure in 20 minutes but no oil.

Goliad County: Frank and George Frankel's Schroeder 1 has opened a new pay and extended production on the south side of Slick field. Perforated at 7658-63 feet, the flow was 75 barrels of 27.4-gravity oil daily through 1/8-inch choke with 1025 pounds pressure on tubing, casing sealed. The well is credited with running around 190 feet lower structurally than the higher wells in the field, but found production in the upper Carrizo. This latter sand showed only gas and condensate in other field wells.

Fred W. Shield has set pipe in Terrell 1, wildcat 4 miles southeast of Fannin and east of old Fannin gas field, in a hole drilled to 5185 feet. Location of the indicated discovery is 350 feet west of Victoria County line and 1800 feet north of San Antonio river on 900-acre lease in Antonio Siedeck survey.

Bee County: The Texas Company found shows of oil in Pettus zone in Cook 1, wildcat 1 mile northwest of Mineral in Henry Cole survey, northwest part of county. It will be drilled to projected depth in Carrizo-Wilcox before attempting to make a test.

Brooks County: Humble Oil & Refining Company is making further tests in Scott & Hopper 1, NE SE ACH&B 107, wildcat 4 miles northeast of Alta Mesa field, that is opening a new field. Drill-stem test at 6522 feet recovered 15 barrels of condensate daily with 4,500,000 cubic feet of gas. Previously, a drill-stem test at 6311-14 feet recovered 500 feet of oil and 45 feet of mud in 20 minutes.

Texas Gulf Coast

Second Location Made In New Liberty Area

A second location, Willis 1, NW NW T&NO 28, has been staked in the recently discovered Cottonwood field of Liberty County by William Helis, driller of the discovery well. Location is southeast of the discovery. Hirsch 1, which was completed one month ago for 92 barrels daily through 7/64-inch choke, from perforations at 7704-10 feet. The second well, projected to 8500 feet, is due to start drilling at once.

San Jacinto County: Shell Oil Company is preparing to deepen Central Coal & Coke 11, west outpost to the Mercy field. The new projected depth is 11,500 feet which will be a thorough test of the Wilcox. The same company recently abandoned a deep test at Mercy after finding the sands too low to produce.

Montgomery County: Superior Oil Company has completed another well at Lake Creek in three different levels. The McWhorter 2-C topped Wilcox at 8530 feet and was completed as follows: B sand was perforated at 9790-9810 feet and flowed 258 barrels through ¼-inch choke between 5-inch and 7⅝-inch casing; C sand was perforated at 9988-10,000 feet and flowed 306 barrels daily through ¼-inch choke between the 5-inch and 2½-inch pipe; D sand flowed 420 barrels daily through ¼-inch choke from sand at 10,282-10,302 feet. Total depth is 10,302 feet.

Austin County: Pan American Production Company is making tests in Austin College 1, 1 mile southwest of production at Raccoon Bend. With the hole bottomed at 9519 feet and with 5½-inch pipe set to 7686 feet, operators found sands showing for possible production at 7300 feet and 7320 feet.

Brazoria County: The Texas Company has dual-completed an oil well at West Columbia. Abrams 47 flowed 567 barrels per day through ¼-inch choke from perforations at 5360-70 feet. The other sand was topped at 5190 feet and flowed 467 barrels daily through ¼-inch choke. Total depth is 5526 feet with 5½-inch set to 5520 feet.

Used Oil Field *and* Industrial Equipment

•

Casing *and* Line Pipe

•

Drilling Equipment

•

Valves, Flanges, Swages, Fittings *and* Couplings

•

Casing Pulling *and* Shooting

•

Pipe Straightening, Testing, Machine Work

•

Rental Service:

Equipment *and* Tools, Drill *and* Line Pipe, Tongs, Slips, Spiders, etc.

SPECIAL

3 Chicago Pneumatic 2-Stage Vertical Gas Engine Driven Air or Gas Compressors . . . 9 x 4¼ x 10 — 80 H.P. — 500-lb. W.P.

•

OILFIELD SALVAGE CO., INC.

Phone Charter 4-6914 **2019 Brooks Street**

P. O. Box 2589

HOUSTON 1, TEXAS

1942 REVISED AND ENLARGED EDITION

including a comprehensive new section on Photography

HENLEY'S TWENTIETH CENTURY BOOK OF FORMULAS, PROCESSES AND TRADE SECRETS

A TREASURE-HOUSE OF SCIENTIFIC FORMULAS, Trade Secrets, Chemical Processes and Money Making Ideas

Every owner of this book can profit through its use, not only from information gleaned from its pages, but from new discoveries; or from new applications or uses, inspired by its interesting disclosures. HENLEY'S FORMULA BOOK is one of those rare "finds" upon which no one can lose anything, and from which one may gain everything.

Manufacturers, Chemists, Electricians, Housewives, Dentists, Farmers—men and women in every trade and profession — call **HENLEY'S 20th CENTURY BOOK OF FORMULAS, PROCESSES AND TRADE SECRETS,** the most valuable book of its kind. Nearly 10,000 formulas, processes, trade secrets. A wealth of practical, accurate knowledge and guidance. Formulas for almost everything imaginable. New ways of doing things. Technical processes. So-called trade secrets. Many people have found this book a starting point for their own businesses. It has helped thousands make more from their present businesses and professions.

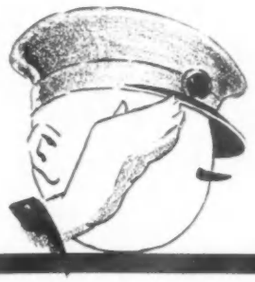
How to make all kinds of Adhesives and Alloys for every purpose; Anti-Freezing Solutions; Beauty Preparations; Beverages — all kinds; Brass re-finishing and renovating; Bronze Powders; Casein; Cement Fillers; Cleaning Preparations; Cosmetics of all kinds; Chromium Plating; Dandruff Cures; Electro-plating and Electrotyping; Essences and Extracts of Fruits; Freezing Mixtures; Glazes; Inks of all sorts; Insecticides; Lacquers; Laundry Preparations; Leather; Lubricants; Mirrors; Ointments; Paints; Paper; Perfumes; Photography—including all the latest developments; Plastics; Polishes; Refrigerant Deodorizer; Soldering; Varnishes; Waterproofing; Weights and Measures; Wood Preservation. Thousands of other practical, tested methods for doing things.

SIZE 8½ x 5½—900 pages cloth bound—PRICE $4.00

Send orders to

THE GULF PUBLISHING COMPANY

P. O. Drawer 2608 **Houston, Texas**



AT YOUR SERVICE!

FLAME HARDEN

TOOL JOINTS *and* WEAR SUBS *for longer life*

Field tests have proven an increased life up to three times normal wear.

Complete

Heat Treating SERVICE

- Carburizing
- Annealing
- Normalizing
- Cyaniding
- Salt Bath Treating
- Stress Relieving
- Flame Hardening

Metallurgical Engineers

HOUSTON HEAT TREATING CO., Inc.

P. O. Box 1691
HOUSTON 1, TEXAS

2100 Quitman **Phone C. 4-5533**

South Louisiana

Expect New Field In North St. Martin

Possibilities of the opening of a new field in north portion of St. Martin Parish is seen with Amerada Petroleum Corporation setting 5½-inch pipe to 10,445 feet in Bertinot-Quebedeaux 1, wildcat in section 44-7s-5e. Although details have not been released, the prospect long has been regarded as favorable for production. Other wildcats have been drilled in the general area, while the present location is southwest of Arnaudville townsite. The hole is bottomed at 10,700 feet.

Acadia Parish: Union Sulphur Company has set 5-inch liner to bottom in Andrus 1-A, semi-wildcat in the Branch area, preparatory to making a flow test. Operators set 7-inch casing to 9936 feet while total depth is 10,536 feet in sidetracked hole. Tests are due to be made in the deeper gas-condensate sands. One test was made in perforations at 9927-29 feet which showed some oil with 3400 pounds working pressure.

Evangeline Parish: Continental Oil Company and Humble Oil & Refining Company have completed potential on the discovery well of the Reddell field. Pardee 3 was completed in the Tate sand in perforations at 9960-10,000 feet, producing 156 barrels of 56.6-gravity oil daily through 7/64-inch choke on top and 9/64-inch choke on bottom. Tubing pressure was 1050 pounds and gas-oil ratio mounted to 6000/1.

THAT'S WHAT THEY'RE BUILT FOR!

AMERICAN FULL ROLLER BEARINGS are made to exacting bearing requirements demanding the utmost in strength, durability and smooth, continuous performance under gruelling and abusive operating conditions. AMERICAN FULL ROLLER BEARINGS are carefully engineered, service-proven, time-tested. They are specially designed for extra heavy duty service and guaranteed to give flawless, trouble-free performance under the most severe strains and stresses encountered in the operation of modern heavy industrial machinery and equipment. Because they are built to outlast the equipment itself, few AMERICANS have ever failed in service.

Consult AMERICAN engineers on your next full-roller application.

AMERICAN ROLLER BEARING COMPANY
PITTSBURGH PENNSYLVANIA
Pacific Coast Office: 1718 S. Flower Street, Los Angeles, California

AMERICAN HEAVY-DUTY ROLLER BEARINGS

North Louisiana

Activity Being Renewed In Sugar Creek Area

Renewed activity in the Sugar Creek area of Claiborne Parish, where operations have been quiet for several months, is indicated by a new location, Hassie Hunt Trust's Slaughter 1, NE SW 9-19-5, 1 mile northeast of Roy Lee Trustee's W. J. Byrd 1, extension well across the fault line. Plans call for drilling the Slaughter well to 9000 feet.

Tensas Parish: Union Producing Company's Penrod-Jurden 1, second producer in the Holly Ridge field, was officially reported to have made 840 barrels on ¼-inch with a gas-oil ratio of 870/1. This test defines the Holly Ridge discovery as the most important in North Louisiana for the year. Union Producing Company has made location for Penrod-Jurden 2, NE NE 19-10-11. Penrod-Jurden 1 was bottomed at 8428 with perforations from 8382 to 8410.

Webster Parish: Final completion has been announced for Ohio Oil Company's W. T. Gleason 1, NW NW 31-22-9, a 2¾-mile extension of the Cotton Valley producing zone. Perforation was from 8452 to 8482 feet and the well produced 232.3 barrels of 63.3-gravity oil per day under a 16/64-inch choke. Gas-oil ratio was 13,721/1.

Arkansas

Union County Area Gets Second Extension

Another extension of the producing areas, the second in two weeks in Union County, is indicated on the basis of a showing in a wildcat.

Kerlyn Oil Company's Union Sawmill Company 1, Section 9-17-13, is expected to make a pumper from around 2700 feet after testing salt water in lime and at other levels. Pumping equipment is being installed. The well is 2 miles east of the proven area in the old Rainbow City field.

Last week's extension came in the Cotton Valley producer of Harold Wright's Cox 1, C NE SE 8-17-18, in the Mt. Holly field, extending the area from Union into Columbia County. The well started producing 4 barrels per hour on a ⅛-inch choke and is now closed in waiting on tanks, with a shutin pressure of 765 pounds.

Michigan

Gratiot County Wildcat Finds Shallow Gas Area

Weller and Caldwell's Davidson 1, N½ NW SW 36-11n-3w, Arcada Township, Gratiot County, a wildcat, logged Stray sand at 888 feet and gauged 5,870,000 feet of gas at 899 feet where drilling was momentarily halted to make preparations to handle the gas while drilling to 3000 feet for a Dundee lime oil test. This appears to definitely open a new shallow gas pool and its structure record on the top formations gives promise of closure on the deeper beds.

Newaygo County: Pure Oil Company bottomed Detroit Trust 2, E½ SW SE 8-14n-11w, Goodwell field, at 3562 feet

BLOCK SELECTIONS
from the
McKISSICK CATALOGUE

★ *Buy* MORE WAR BONDS

CONSTRUCTION BLOCK

This all steel construction block serves many purposes and is built to stand a lot of abuse. The steel sheaves with machined line grooves eliminate excess wear on the wire line. It is available in 6", 8" and 10" diameter sheave sizes. Other features are its large diameter sheave pins, full roller bearings or high speed bronze bushings, and Alemite lubrication.

PIPE LINE BLOCKS

Here is a practical block made to take a working load from 6 to 12 tons. It may be obtained with a single or double 8" or 10" steel sheaves and handles 5/8—3/4" wire rope. It has a 1½" center pin and will be furnished with bronze bushed or roller bearing sheaves.

EXTRA HEAVY WIRE ROPE BLOCKS

This block is designed with a stiff swivel swinging hook, and can be furnished in Diamond pattern with rope guards on request. It is all steel construction, has large diameter center pin, high speed bronze bushing and is Alemite lubricated. It is obtainable from stock in sizes 18 x 10" to 36 x 20", single, double and triple sheaves, and will be furnished with greater capacity on request.

Catalog on Request

McKISSICK PRODUCTS CORPORATION
TULSA, OKLAHOMA

without picking up a commercial pay in the Dundee or Monroe sections. Test will be plugged back to 2760 and retested for Traverse production. It was the second deep well failure for the shallow pool. Two other tests are being drilled to the deeper formations.

Osceola County: Perforated between 3112 and 3126 feet, C. L. Maguire, Incorporated's Sherwood 1, S½ NE SE 36-19n-10w, ½ mile west extension test for the Rose Lake Traverse lime pool, showed only a trace of gas and oil. Operators plan to tube and acidize. The west side of the field offers the only good expanding area for the pool.

Florida

Will Pump Discovery; Second Test Starting

Humble Oil & Refining Company, discoverer of first commercial oil production in Florida, has announced location for a second test, Gulf Coast Realties 2, C SW 30-48s-30e, south of the discovery.

The company is preparing to pump the discovery well after it failed to build enough pressure to flow. Before pumping equipment was installed, it swabbed 180 barrels of oil, 375 barrels of basic sediment, and 115 barrels of water in two days. Total depth is 11,630 feet in lime with 7-inch pipe set to 11,598 feet.

William G. Blanchard is drilling at 7430 feet in Everglades 1 in Section 31-53s-35e, 40 miles west of Miami and 40 miles southweast of Humble's well.

California

Kern County Wildcat Shows Promise of New Pool

Promise of a new field opened through wildcatting, extension to the old Inglewood area, and a new gas field featured developments this week.

Kern County: Dwight D. Vedder's 1-18, NW NW SE 18-27-28, two miles west of production in the Mount Poso area, reported interesting showings in the Vedder sand topped at 2440 feet. High structural position and good appearance of cores make the project exceptionally promising. It is a fault play with possibilities for a pool exceeding 300 acres. The yield from similar formation in developed areas to the east runs about 50,000 barrels to the acre.

Los Angeles County: Federal Oil Company's Federal-Smith 4, in the old Inglewood field, near the southwest corner of Duquesne and Jefferson Boulevard, was completed with an initial flow of 2950 barrels of 33.8-gravity oil. Production was through a 30/64-inch choke, with pressure from 1750 to 2000 pounds and gas yield estimated at 1,500,000 feet. This extension shows a sand section of 538 feet carrying 90 feet more Sentous zone sand than has been found in any other well in the area. It appears to be a fault accumulation with the zone thickening down the northwesterly field plunge, and there is a possibility that the play will lead into the town-lot area of nearby Culver City.

Madera County: Shell Oil Company's Gill 38-18, SW SE SW 18-13-16, Herminghaus area, apparently has brought in another gas field at a location between the Mendota discovery field and that recently opened by The Texas Company in Firebaugh area. On a formation test from 4417-4471 feet, present bottom, the well made a blow of an estimated 11,300,000 cubic feet daily rate.

San Luis Obispo County: Los Nietos Company's Scott 1, in the northern part of the Oak Park Tract, 5-32-13, cored sand of good appearance from 3102 feet to present bottom of 3155 feet, and casing has been set. The accumulation indicated is believed to be in a stratigraphic trap, with sand the equivalent of the Pismo zone.

Humboldt County: A wildcat is being launched by British-American Oil Production Company, as a result of geophysical studies. The first test likely will be drilled in TWP 3-1, not far from the town of Eureka. In a nearby area The Texas Company several years ago found gas and distillate shows but not of commercial proportions.

Kern County: Richfield Oil Corporation's newly discovered Tejon Ranch oil field will probably be extended about 1000 feet southward by its second well, Tejon 5, 35-11-19. Chanac sand was topped at 2100 feet, somewhat higher than in the discovery well and showed good saturation to present bottom of 2149 feet. Casing has been set preparatory to taking in more formation.

Rocky Mountain Area

Colorado Wildcat Has 80 Feet Saturation

Continental Oil Company's Unit 1, SW NW SE 23-44n-99w, Gebo dome wildcat, Wyoming, an important discovery in Embar lime at 4735-4845 feet, estimated upwards of 5000 barrels daily of 30-gravity oil, made a drill-stem test in the Tensleep at 5171-5211 feet, open 30 minutes, and yielded 150 feet of mud and water. The well is to be plugged back and completed in the Embar.

Clarks Lake: Amerada Petroleum Corporation's wildcat test of the Clarks Lake area, six miles south of the Fort Collins field, Colorado, Hartshorn 1, SE NE SW 15-9n-68w, a discovery in Muddy sand at 5888-5969 feet, found the entire 81 feet saturated, but was unable to make a drill-stem test because of difficulty in seating the tester for a shutoff, and is drilling deeper to test the Dakota, Lakota and Sundance to 8000 feet.

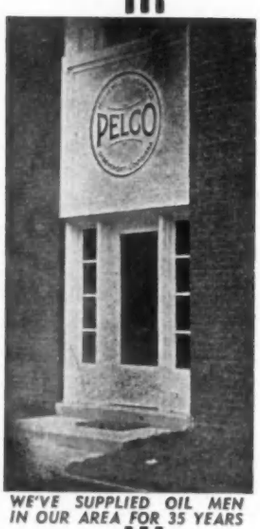
Winkleman Dome: Stanolind Oil & Gas Company is building rig for Shoshone-Arapahoe 1, SW SE SW 18-2n-1w, wildcat test for black oil on Winkleman dome located on the bench south of the Pilot Butte oil field, Fremont County, Wyoming.

Winkleman dome is a faulted anticline with 125 feet of closure and is formed in the beds of Mowry shale of Cretaceous age. Two wells have been drilled on the structure, both developing gas flows of approximately 3,000,000 cubic feet in the Morrison at 945 feet.

FRED A. LICHTENHELD, district mechanical engineer for Cities Service Oil Company at Oklahoma City, addressed Engineers Club of Tulsa November 22 on "The Upkeep and Maintenance of Internal Combustion Engines."

Too Many Blind Dates

There are too many blind dates with industry these days — too many men willing to take what they get and pay what is asked. Doubtful merchandise always finds a market at a time like this, diverting manpower and materials from legitimate production, so that the war effort is more often an excuse than a reason. We have introduced many able oil men to many good lines of supplies and equipment. Our introductions have meant something for 35 years. We arrange no blind dates now. When tempted to make one, TRY PELCO FIRST.



WE'VE SUPPLIED OIL MEN IN OUR AREA FOR 35 YEARS

PELICAN WELL TOOL & SUPPLY CO.

SHREVEPORT LOUISIANA

PELCO

Houston
Berwick
Houma
New Iberia
Lake Charles

United States Well Completions

ARKANSAS

Columbia County: Lechner and Hill's W. L. Smart 2, nw ne nw 14-15s-20w, Tokio 3500 ft.

Columbia County—Mt. Holly extension: Harold Wright et al's W. A. Cox 1, c ne se 8-17s-18w, flow 150 bbls, ¾-in, perf 5894-5903 Cotton Valley, abnd in lime 7100 ft.

Union County—Hillsboro: D. V. Lacefield's Union Sawmill D-1, c sw se nw 13-18s-14w, 35 bbls.

Kinard's Kelly 1, 9-17s-14w, abnd 3000 ft.

CALIFORNIA

Fresno County — Coalinga: Standard's 3-3-25D, se nw nw 25-20-14, pump 18 bbls oil, 13 bbls water, 81 ft perf 1151 ft, td 1156 ft.

Tide Water's Canadian Coalinga 11-A, se sw sw 8-21-15, pump 129 bbls 30.8-gr, perf 3156-3268 ft, td 3268 ft.

Fresno County—Riverdale: Amerada's Young 85-16, ne ne se 16-17-19, flow 200 bbls 37.9-gr oil, 181,000 gas, 10/64-in, 1150/400 lbs, 5½-in at 7920 ft, td 7920 ft.

Kern County—Belridge, South: Belridge Oil Co.'s 54-34 sw sw ne 34-28-21, pump 50 bbls 13.7-gr, perf 624-670, 904-1210 ft, td 1210 ft.

General Petroleum Corp.'s 33-2 nw sw ne 2-29-21, pump 71 bbls 14.6-gr, perf 606-653, 713-777 ft, td 850 ft, pb 788 ft.

Shell's TWA 9, ne se sw 1-29-21, pump 18 bbls 13.5-gr oil, 27 bbls water, perf 1098-1086, 1040-869 ft, td 1130 ft.

Kern County—Cymric: Honolulu Oil Corp.'s Fitzgerald 61A-26, ne nw ne 26-29-21, pump 53 bbls 12.7-gr, perf 1429-1214 ft, td 1454 ft.

Victory Oil Co.'s 73-A, nw se ne 26-29-21, pump 50 bbls 12-gr oil, 116 bbls water, 130 ft perf 1273 ft, td 1275 ft.

Kern County—Kern Front: Standard's 49, se nw se 15-28-27, pump 116 bbls 16.3-gr oil, 27 bbls water, 7-in 2335 ft, td 2340 ft.

Kern County — Midway - Sunset: Chanslor Canfield Midway Oil Co.'s 30-25, ne nw sw 25-3122, pump 4 bbls 18.5-gr oil, 21 bbls water, 190 ft perf 2373 ft, td 2460 ft, pb 2373 ft.

Standard's 27-33B ne sw sw 23-31-23, flow 147 bbls 29.6-gr oil, 77,000 gas, 16/64-in, 200/0 lbs, 35 ft perf 4230 ft, td 4363 ft, pb 4237 ft.

Texas Co.'s 12-6, sw sw sw 12-31-22, pump 12 bbls 17.4-gr oil, 3 bbls water, td 1827 ft.

Kern County—Poso Creek-Premier: Standard's 15-9, ne sw nw 9-28-27, pump 74 bbls 13.8-gr oil, 22 bbls water, 7-in, td 2800 ft.

Los Angeles County—Dominguez: Union's Hellman 53, 1401 ft nly 1671 ft ely fr c/l Victoria and Central, pump 9 bbls oil, 35 bbls water, perf 4740-4875, 4959-4974 ft, td 5600 ft, pb 5050 ft.

Los Angeles County—Inglewood: Federal Oil Co.'s Federal-Smith 4, 159 ft sely al c/l Duquesne proj fr c/l Jefferson Blvd th 264 ft swly at r/a 7-2-14, flow 2950 bbls 33.8-gr, 30/64-in, 1750/1800 lbs, perf 7790-8328 ft, td 8329 ft.

Los Angeles County—Wilmington: General Petroleum Corp.'s Terminal 15, 4663 ft s 747 ft w c/l Ford and Anaheim, 4-5-13, pump 118 bbls 13.8-gr oil, 66 bbls water, perf 2431-2517, 2548-2639 ft, td 2640 ft.

Long Beach Oil Development Co.'s "W" 59, 430 ft nely alg n/l Seaside Blvd fr e/l 27th Ave th 1748 ft sely at r/a, pump 204 bbls 16.9-gr, perf 2976-3174, 3255-3293 ft, td 3295 ft.

Long Beach Oil Development Co.'s "X" 16, 62 ft swly alg n/l Seaside Blvd fr w side Santa Barbara Ave th 891s 260w, pump 126 bbls 22.3-gr, td 3952 ft.

Union Pacific's 230, 4000 ft s 1625 ft e c/ls Ford and Anaheim, 3-4-13, pump 178 bbls 15.1-gr oil, 12 bbls water, perf 2262-2264, 2284-2241, 2387-2389, 2394-2562 ft, td 2562 ft.

Santa Barbara County—Gato Ridge: Petrol Corp.'s Tognazzini 336, 2737 ft s 950 ft e nwc Tognazzini lse, 15-8-32, pump 286 bbls oil, 71 bbls water, perf 2550-2740, 2820-3297 ft, td 3298 ft.

Ventura County — Ventura Avenue: Tide Water's Lloyd 149, 300 ft n 7450 ft e c/l No. 11, flow 785 bbls 25.7-gr oil, 134,000 gas, 128/64-in, 50/500 lbs, 560 ft perf 10,055 ft, td 10,140 ft, pb 10,055 ft.

Tide Water's McGonigle 19, 914 ft n 7584 ft e c/l No. 11, flow 415 bbls 30.4-gr, 58 bbls water, 273,000 gas, 1-in, 50/1500 lbs, 863 ft perf 10,986 ft cp'd 10,123, ft, td 10,990 ft, pb 10,892 ft.

CALIFORNIA WILDCATS

Glenn County—Failure: Superior's Glenn Comm. Three 72-20, sw ne se 31-21-1, Chico area, abnd 9179 ft.

Kern County—Failure: Bandini Pet. Corp.'s Signal-Mills 2, sw nw sw 24-28-28, southwest Round Mountain area, green sand and clay, abnd 3053 ft.

ILLINOIS

Clay County: Pure's Klingensmith Cons. 1, nw ne se 25-3n-8e, McCl 2979-82 ft, 3045-47 ft, 872 bbls, 3080 ft.

Texas Co.'s H. Byers 3, se sw ne 22-5n-5e, AV 2345-54 ft, 155 bbls, 2357 ft.

Clinton County: Shell's Nollar 1, ne se se 21-2n-1w, abnd 1318 ft.

Edwards County: Lewis Prod. Co. et al's I. Dunk 2, nw se se 36-2s-10e, Walts 2388-2404 ft, 2412-2422 ft, 184 bbls, 2435 ft.

Midstates Oil Corp. et al's Michels 1, se se se 11-3s-10e, abnd 2569 ft.

Texas-Magnolia's Gillespie Comm. 1, ne sw ne 9-1n-10e, McCl 3270-80 ft, 283 bbls, 3280 ft.

Effingham County: N. E. Dexter et al's Brumleve 1, se se nw 17-8n-7e, abnd 2651 ft.

Fayette County: Whisenant & Trenchard's H. Lilly 27-D (WO), w½ sw se 16-8n-3e, salt wtr disposal well, 3164 ft.

Hamilton County: Shell's Morris-Shelton 3, sw se nw 18-6s-7e, abnd 2455 ft.

Great Lakes Carbon's Ackerman 1, sw ne ne 33-6s-10e, abnd 3075 ft.

Cherry & Kidd's F. J. Wright 3, sw ne ne 15-6s-10e, TS 2039-48 ft, Walts 1940-57 ft, Cyp 2372-86 ft, 384 bbls, 2395 ft.

Jefferson County: Mohawk Drlg. Co.'s People Heirs 1, se sw se 13-2s-4e, McCl 3098-3104 ft, 3111-15 ft, 3117-22 ft, 570 bbls, 3137 ft.

Marion County: (Old well deepened) Texas Co.'s J. Friesner 17, ne se nw 32-2n-2e, Tr 4514-66 ft, 4580-90 ft, otd 3372 ft, 10 bbls, 4597 ft.

Shelby County: Aylward Pet. Co.'s M. Moran 1, ne ne nw 27-10n-5e, AV 1942-47 ft, 17 bbls, 1955 ft.

Wabash County: First Nat'l Pet. Trust's Shaw-Courter Comm. 2, se ne se 7-1s-12w, Cyp 2070-84 ft, 240 bbls, 2084 ft.

Magnolia's Campbell Heirs 3, sw se ne 7-1s-12w, Cyp 2040-58 ft, 30 bbls, 2143 ft.

First Nat'l Pet. Trust's Wabash County Poor Farm 1, nw sw nw 8-1s-12w, Cyp 2030-41 ft, 25 bbls, 2051 ft.

Superior's E. & C. Crowe Unit 10, ne nw nw 9-1s-12w, Cyp 2015-31 ft, 112 bbls, 2036 ft.

Wayne County: C. F. Frazier's Mary Fannon 1, se nw 22-2s-6e, abnd 3401 ft.

Cities Service's Creighton 1, nw se se 32-2s-9e, McCl 3323-34 ft, 711 bbls, 3375 ft.

Texas Co.'s M. E. Heaton 4, ne 17-3s-7e, AV 3198-3212 ft, McCl 3343-60 ft, 59 bbls, 3366 ft.

J. P. Washburn et al's L. C. Jordan 3, nw se nw 34-2n-7e, abnd 3123 ft.

White County: W. C. McBride's Ladora 1, nw se sw 6-4s-14w, abnd 2945 ft.

Phillips' Laura 4, nw se sw 19-4s-11e, Ben 2821-30 ft, L O'H 3019-22 ft, 58 bbls, 3088 ft.

Phillips' Laura 7, se nw sw 19-4s-11e, McCl 3023-28 ft, 146 bbls, 3044 ft.

Great Lakes Carbon's F. Reiling Heirs 1, ne sw sw 22-6s-10e, abnd 3082 ft.

Great Lakes Carbon's Miller 1-A, sw sw ne 28-6s-10e, TS 2275-81 ft, 2286-92 ft, AV 2898-2916 ft, 25 bbls, 2916 ft.

ILLINOIS WILDCATS

Clinton County—Failure: Rea & Richardson's Jantzen 1, se sw se 29-2n-2w, abnd 1266 ft.

Effingham County — Failure: Kiowa Drlg. Co.'s Londenberg 1, se se nw 35-7n-6e, abnd 2816 ft.

Fayette County—Failure: Buell & Doran's M. Stine 1, sw sw se 21-6n-2e, abnd 2009 ft.

Hancock County—Failure: Dale Hopkins et al's K. Slater 1, sw nw 20-3n-5w, abnd 673 ft.

Jasper County — Failure: Helmerich & Payne's Chas. Honey 1, ne ne 22-5n-10e, abnd 3007 ft.

White County—Discovery: A. J. Slagter et al's Sefried 1-A, sw se 30-3s-11e, Biehl 1850-67 ft, 44 bbls, 2400 ft.

INDIANA

Gibson County: F. B. Hilles et al's Edwin Phillips 1, Don 94-1n-10w, McCl 1828-38 ft, 31 bbls, 1842 ft.

K. D. Holland's E. Phillips 2, Don 112-1n-10w, abnd 1833 ft.

Harrison County: Harrison Dev. Co.'s Hayes 1, ne nw 36-3s-3e, abnd 826 ft.

Harrison Dev. Co.'s J. T. McClaren 1, c se sw 24-3s-4e, abnd 940 ft.

Knox County: J. E. Bauer's J. M. Breevort 1, sw se 22-2n-11w, abnd 1951 ft.

INDIANA WILDCATS

Gibson County — Failure: Phillips' Ed J. Nass 1, nw ne nw 36-3s-11w, abnd 2341 ft.

Posey County—Failure: Sinclair Wyoming's A. Grein 1, c ne se 24-8s-14w, abnd 2704 ft.

Spencer County—Discovery: W. B. Bateman, Tr.'s J. Ernst 1, se nw sw 8-6s-4w, Jackson 796-803 ft, 10 bbls, 803 ft.

Spencer County—Failure: Big Four Oil Co.'s Zimmerman et al 1, ne nw se 1-8s-7w, abnd 1975 ft.

KANSAS

Barber County — Sun City: Great Lakes Carbon's Massey "B" 1, nw ne se 27-30s-15w, Marmaton 4310 ft, T Lans 3872 ft, 15,000 gals acid in Lans, tested 1 bbl fluid per hr, abnd 4368 ft.

Barton County—Merten: Vickers & Darby's Saylor 1, nw sw ne 3-19s-15w, Reagan 3568 ft, shot 10 qts, swab 80 bbls, 3582 ft.

Barton County—W. Silica: J. H. Hershey's Wolf 4, c se ne 1-20s-12w, Arb 3341 ft, 2000 gals acid, pump 232 bbls oil, 78 bbls wtr, 3356 ft.

Cowley County — Turner: Kansas-Oklahoma

Wells Completed in United States in Week Ended November 27, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS: *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	5	2
Arkansas	3	....	....	1	4	....	....	....	....	....	4	8	202	213
California	22	....	....	....	22	....	....	....	2	2	24	39	1,452	729
Colorado	....	....	....	....	....	....	....	....	....	....	....	....	24	14
Florida	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Illinois	16	....	1	9	26	1	1	....	5	6	33	31	1,676	1,960
Indiana	1	....	....	4	5	....	1	....	3	4	9	6	259	351
Kansas	23	1	....	9	33	1	....	....	15	15	49	34	1,598	1,490
Kentucky	2	....	....	3	5	....	....	....	6	6	11	14	388	155
Louisiana	5	....	....	2	7	....	1	....	1	2	9	10	522	861
North Louisiana	4	....	....	1	5	....	....	....	....	....	5	1	202	....
South Louisiana	1	....	....	1	2	....	1	....	1	2	4	9	320	....
Michigan	3	1	....	3	7	....	....	....	6	6	13	11	545	633
Mississippi	....	....	....	....	....	....	....	....	....	....	....	....	35	97
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	22	34
Montana	....	....	....	....	....	....	....	....	....	....	....	....	208	186
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	....	28
New Mexico	4	....	....	....	4	....	....	....	2	2	6	4	245	356
New York	18	....	8	....	26	....	....	....	....	....	26	26	1,098	1,137
Ohio	3	2	....	1	6	....	....	....	....	....	6	2	707	1,036
Oklahoma	21	5	4	6	36	4	1	2	4	7	47	30	1,342	1,290
Pennsylvania	33	....	18	....	51	....	....	....	....	....	51	50	2,471	3,671
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	6	8
Texas	46	....	....	29	75	4	1	1	20	22	101	101	3,909	4,894
E. T. Bor. Co.'s	....	....	....	....	....	....	....	....	....	....	....	2	18	....
E. Texas. Field	....	....	....	....	....	....	....	....	....	....	....	....	5	....
Rest of E. Texas	9	....	....	9	....	....	....	....	2	2	11	6	229	....
North Texas	11	....	....	14	25	1	....	1	4	5	31	27	975	....
W. Central Texas	2	....	....	1	3	2	....	....	2	2	7	12	354	....
West Texas	11	....	....	2	13	1	1	....	1	2	16	23	872	....
Texas Panhandle	3	....	....	1	4	....	....	....	....	....	4	5	180	....
G. Coast, Upper	3	....	....	3	6	....	....	....	2	2	8	7	302	....
G. Coast, Lower	6	....	....	2	8	....	....	....	5	5	13	10	579	....
Southwest Texas	1	....	....	5	6	....	....	....	1	1	7	9	337	....
S. Central Texas	....	....	....	1	1	....	....	....	3	3	4	....	58	....
West Virginia	....	10	....	3	13	....	....	....	....	....	13	13	628	695
Wyoming	....	....	....	....	....	....	....	....	....	....	....	....	111	95
Total U. S.	200	19	31	70	320	10	5	3	64	72	402	379	17,457	19,941

* Includes distillate wells. †Includes salt water disposal wells.

Oil Co.'s Turner 3, nw ne nw 30-32s-6e, Layton sd 2265 ft, hfw, abnd 2294 ft.

Cowley County—Rahn: B. B. Blair's Jane Waldschmidt 1, se sw se 12-34s-5e, Bart sdy sh 2920 ft, pump and flow 400 bbls, 2959 ft.

Cowley County—Un-named: Jack Garden's Jess Rahn 3, se ne nw 13-34s-5e, Bart 2963-66 ft, shot 70 qts, flow 1067 bbls, 3001 ft.

Ben Grallop's Ruth Rahn 1, sw ne se 14-34s-5e, Bart 2948 ft, pump and flow 200 bbls, 2990 ft.

Ellis County — Riverview: N. Appleman's Richards Ranch 2, se sw se 19-11s-18w, Cherty Cong 3615 ft, ns, abnd 3651 ft.

Ellis County—Un-named: Champlin Refg.'s Johnson 2, se ne nw 29-11s-18w, Arb 3585 ft, 1000 gals acid, pump 2700 bbls, 3589 ft.

Stanolind's McNeley 1, se ne ne 30-11s-18w, Arb 3609 ft, 500 gals acid, pump 109 bbls, 3613 ft.

Ellis County—Beeching: Coralena's Gorham 1, ne nw sw 35-15s-16w, KC 3150 ft, 10,000 gals acid, pump 1060 bbls, 3333 ft.

Ellsworth County — Wilkens: Phillips' Grounds 2, c se sw 12-17s-10w, Arb 3255 ft, 1500 gals acid, swab 88 bbls in 3 hrs, 3266 ft.

Graham County—SE Morel: British American's F. Barry 1, nw sw sw 24-9s-21w, Arb 3771 ft, 100 gals acid, pump 195 bbls, 3775 ft.

Graham County — Un-named: Bridgeport's Fessler 3, nw ne nw 25-9s-21w, Arb 3833 ft, ns, abnd 3837 ft.

Marion County—Lost Springs: Oathout et al's Thompson 2, se se se 26-17s-4e, Viola 2511 ft, hfw, abnd 2516 ft.

McPherson County—Henne: H. M. Drlg. Co.'s Spilman 2, s½ nw nw 16-17s-1w, Miss 2623 ft, pump 301 bbls, 2635 ft.

McPherson County—(Semi-wildcat): Brown & Strouse's M. Leffler 1, se se ne 23-19s-1w, Miss 2906 ft, fill 850 ft fluid mostly wtr in 12 hrs, abnd 2943 ft.

Pratt County—Carmi: Shell's Hoeme 2, sw se nw 28-26s-12w, Arb 4275 ft, 1000 gals acid, flow 99 bbls per hr, 4301 ft.

Shell's Miskimin 3, sw sw ne 32-26s-12w, Arb 4280-85 ft, 2500 gals acid, flow 347 bbls in 7 hrs, 4305 ft.

Pratt County—Un-named: Skelly's Helmke "D" 1, c ne sw 25-26s-13w, Arb 4318 ft, fill 2000 ft oil in 5 hrs, 500 gals acid, 4333 ft.

Bridgeport Oil's Beck "E" 1, c se sw 36-26s-13w, Arb 4330 ft, pump 215 bbls, 4342½ ft.

Reno County—Peace Creek, Zenith: Texas Co.'s F. C. Hornbacker 2, sw nw se 32-23s-10w, Arb Prod, 1500 gals acid, pump 135 bbls, 3747 ft.

Reno County—Zenith: Shell's Paine 3, sw ne nw 5-24s-10w, Viola 3688 ft, 500 gals acid, flow 210 bbls oil, 1,094,000 gas, 3729 ft.

Rice County—Genesco: Continental et al's R. J. Warner "A" 5, ne sw nw 36-18s-8w, Arb 3184 ft, 152 bbls oil, 3218 ft.

Rice County—Chase: Sharon Drlg.'s Maes 1, sw nw sw 14-19s-9w, Arb 3224-33 ft, 1000 gals acid, pump 120 bbls, 3250 ft.

Russell County—NW Sellens: Texas Co.'s L. Sellens 1, c sw ne 22-15s-13w, KC Prod, 4000 gals acid, pump 151½ bbls, 3079 ft.

Russell County—Gorham: Hartman & Blair's Johnson 1, e½ se sw 35-13s-15w, Arb 3324 ft, pump 100 bbls, 3328 ft.

Russell County—Trapp: Clifford Holland's Rein 2, se nw ne 8-15s-13w, Lansing 2930 ft, 3000 gals acid, pump 174 bbls, td 3272 ft, pb 3134 ft.

Saline County—Pliny: Winkler-Koch's Spillman 1, ne nw ne 16-16s-1w, Miss 2658 ft hfw, abnd 2689 ft.

Sheridan County — Studley: Union Oil of California's Pratt 5, nw sw sw 23-8s-26w, Lans 3686 ft, sm sh dead oil, abnd 3865 ft.

Stafford County — Sittner: Keyes Drlg.'s Ahlgrim 1, c s½ nw ne 29-21s-12w, Arb 3600 ft, ns, abnd 3637 ft.

Stafford County—Drach: Stanolind's Henry Tiperman 1, se nw se 6-22s-12w, Arb 3662 ft, 500 gals acid, pump 10 bbls per hr, 3666½ ft.

Stevens County—Hugoton: Northern Nat.'s Albert 2, sw sw ne 14-33s-37w, Ft Riley 2732 ft, 11,000 gals acid, 21,816,000 gas, 2818 ft.

KANSAS WELL DEEPENED

Cowley County—Weathered: Bess & Grallop's Vollweider 2, c nw sw 4-32s-3e, otd 3553 ft, Basal sd 4252 ft, input test 280 bbls wtr per hr, salt wtr disposal well, 4306 ft.

KANSAS WILDCATS

Barton County — Failure: Helmerich & Payne-Phillips' Piller 1, ne ne ne 32-19s-15w, Arb 3628 ft, sso 3628-30 ft, abnd 3690 ft.

Ellis County—Failure: Darby Pet. Co.'s Penney 1, w½ sw se 29-14s-18w, Lans 3351 ft, sdy cong 3644 ft, Arb 3675 ft, abnd 3714 ft.

Logan County—Failure: Texas Co.'s Smith 1, nec sw 30-11s-36w, Arb 5220 ft, abnd 5360 ft.

Marion County—Failure: Browne & Strause's M. Leffler 1, se ne 23-19s-1w, KC 2324 ft, sso Miss 2906-12 ft, abnd 2943 ft.

McPherson County—Failure: Nelson Drlg. Co.'s Messinger 1, nw nw nw 5-18s-7w, Miss 2709 ft, Lans 2145 ft, sso 2709-13 ft, abnd 2739 ft.

Thomas County—Failure: Texas Co.'s Dougherty 1, nw sw sw 23-6s-33w, sso 3428-32 ft, sso 3726-28 ft, Arb 4918 ft, abnd 5023 ft.

Clark County—Failure: Olson Oil et al's Central Life 1, c sw ne 23-32s-24w, Arb 6930 ft, abnd 7082 ft.

Cowley County — Failure: Northern Ordnance's Thompson 1, nwc sw 21-33s-5e, Arb 3669 ft, abnd 2674 ft.

Leavenworth County—Failure: Chas. Miller's Barnhardt 1, ne sw 25-9s-21e, sd 1270-71 dry, Miss 1277 ft, abnd 1446 ft.

Rice County—Failure: Nat'l Assoc. Pet. Co.'s Turner 1, se nw nw 16-18s-8w, Lans 2870 ft, Base KC 3170 ft, shly cong 3230 ft, Cherty cong 3275 ft, Viola 3329 ft, Simpson 3353 ft, Arb 3380 ft, wtr 3405-3407 ft, abnd 3415 ft.

Rush County—Failure: Davis-Childs' Henderick 1, c nw sw 25-16s-18w, Top 3010 ft, Heebner 3277-81 ft, Lans 3316 ft, sso 3348-52 ft, scattered shows to 3415 ft, Por sso 3391-96 ft, 3417-25 ft black o, Base KC 3549 ft, cong 3573 ft, Granite 3593 ft, abnd 3599 ft.

Russell County—Failures: Dowe & Farris' Bratton 1, c nw nw 33-11s-13w, Anhy 865 ft, ns, abnd 3206 ft.

Bell O&G Co.'s Gross 1, se ne 33-12s-13w,

The OIL WEEKLY'S TRADING POST

USED EQUIPMENT FORUM

CLASSIFIED ADS . . . EQUIPMENT . . . SERVICES . . . PERSONNEL

FOR SALE

■ FOR SALE: 3975′ of 5-9/16″ regular API drill pipe. 1300′ Hughes FH drill pipe. 1-3 speed Union Tool Drawworks. General Oil Tool Company, Burrton, Kansas.

■ FOR SALE: 1—44 Super Star drilling machine, in good working condition; powered with 15-30 McCormick-Deering tractor, collapsible steel mast, 2 sheave crown. Write or call, Phil Wilbur, Pace Bldg., Duncan, Okla.

■ FOR SALE: Nearly new Baker Cable Tool Core Barrel (five-inch barrel). ALL COMPLETE with three heads, wrenches, etc. Price $200.00. Address Box 1012, c/o The Oil Weekly, Houston, Texas.

■ FOR SALE: 200 H.P. 17 x 24 National Transit Gas Engine Gas Compressor, Horizontal Type, Good Condition, Price Reasonable. Address Box 1013, c/o The Oil Weekly, Houston, Texas.

■ FOR SALE: Used Pipe: 80,000 ft. 6″ Line Pipe, 10,000 ft. 8″ Line Pipe—Both T. & C. and P. E. Good Condition. Address Box 1014, c/o The Oil Weekly, Houston, Texas.

■ FOR SALE: 2—1500 Watt portable light plants. 1—6 H.P. Fairbanks engine and Conoco power unit. 5—Bessemer & McCune engines with power and power house, 15 to 30 H.P. Veeder Supply & Development Co., Cherryvale, Kansas.

■ FOR SALE: G. M. C. two-ton truck, excellent condition; also 50 H.P. Caterpillar Monarch tractor, both cheap for cash. Call Earl Leech, Rockdale, Texas.

■ OIL MAPS: Complete line of maps of South Florida oil fields showing present leases. Karl Squires, Engineer, 210 Calumet Bldg., Miami, Florida.

■ FOR SALE: Four thousand feet of 2½″ upset seamless tubing. Never been pumped through. Goldberg, 301 Swann Bldg., Tyler, Texas.

■ FOR SALE: 19—6-inch 250-lb. SE Powell NRS gate valves, 3—8-inch ditto, 2—8-inch std ditto, 6—3-inch fig. 190 Irenew globe valves, 18—3-inch 11½-thd Wal std IBBM gate valves, 12—1½-inch fig. 1190 Irenew globe valves, 7—1¼-inch Powell Star 200 WP brass gate valves, 2—4-inch Crane 1117 and 1116 steam pressure relief valves. All materials above new. One used Manistee Rotrubu pump 1240 GPM against 230 ft. head. All materials listed below reconditioned and tested: 22—8-inch 175-lb. Crane flanged OS&Y gate valves, one 10-inch ditto, 3—8-inch flanged 250-lb. NRS ditto, 4—4-inch ditto, 3—6-inch Wescott 1600 WP SE NRS ditto, 3—6-inch 1200 WP ditto, 36—4-inch std SE ditto, 8—4-inch std OS&Y ditto, 1—6-inch flanged 800-lb. WP Crane OS&Y ditto, 6—10-inch std NRS SE ditto. Large stock new and reconditioned fittings sizes 4-inch to 12-inch, flanged or screwed. Write or wire for complete list of materials. No priority rating required. Allied Supply & Mfg. Co., Odessa, Texas. Phone 299; Houston, Texas. Phone Woodcrest 69960.

HELP WANTED

■ Wanted by independent oil company with headquarters in Texas, having production, pipe line, refinery and marketing, statistician with general experience to work directly with Management. Address Box 1015, c/o The Oil Weekly, Houston, Texas.

■ Wanted by large independent oil company with headquarters in Texas, graduate engineer experienced in pipe line construction and maintenance. Address Box 1016, c/o The Oil Weekly, Houston, Texas.

OIL INDUSTRY PRINTED FORMS

■ PAW Form MA-3A required under PAW Redistribution Program No. 2. These and more than fifty other printed forms regularly used by oil companies are immediately available from the Stock Form Dept., Gulf Publishing Company, P. O. Box 2608, Houston 1, Texas. Complete catalog on request.

SITUATIONS WANTED

■ Experienced graduate geologist and engineer desires permanent connection with financial parties entering oil business or progressive independent desiring geological department. Have geological equipment and excellent Mid-Continent files. Box 364, The Oil Weekly, Houston, Texas.

SALES ENGINEER

WANTED

An exceptional opportunity is available with sound company in business over twenty-five years to handle field engineering and sales covering oil field equipment manufacturers in Southwest and Pacific Coast territories.

Mechanical experience and engineering background required. This is a permanent position offering good starting salary with opportunity for substantial increased remuneration.

Replies will be held in strict confidence. State qualifications, age, draft status, salary required and where you can be contacted during next month.

Address Box 206
c/o The Oil Weekly, Houston, Texas

Did you know that more men exclusively engaged in the drilling-producing business subscribe to **The Oil Weekly** than to any other paper? If you want to buy, sell or exchange good used equipment, a low-cost advertisement in this column will get action for you in a hurry. See rates below.

ADVERTISING RATES

TRADING POST SECTION

Regular classified advertisements for this special section, set in type this size without border, take flat rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, THE OIL WEEKLY
P. O. Box 2608 Houston 1, Texas

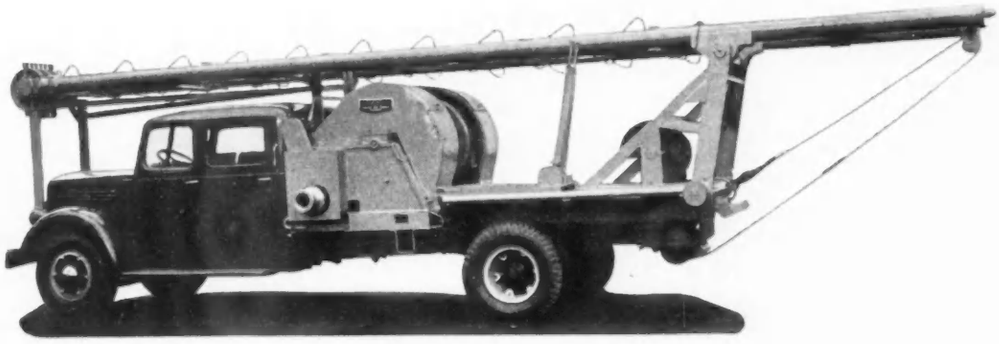
MANY IN SERVICE OVER 3 YEARS

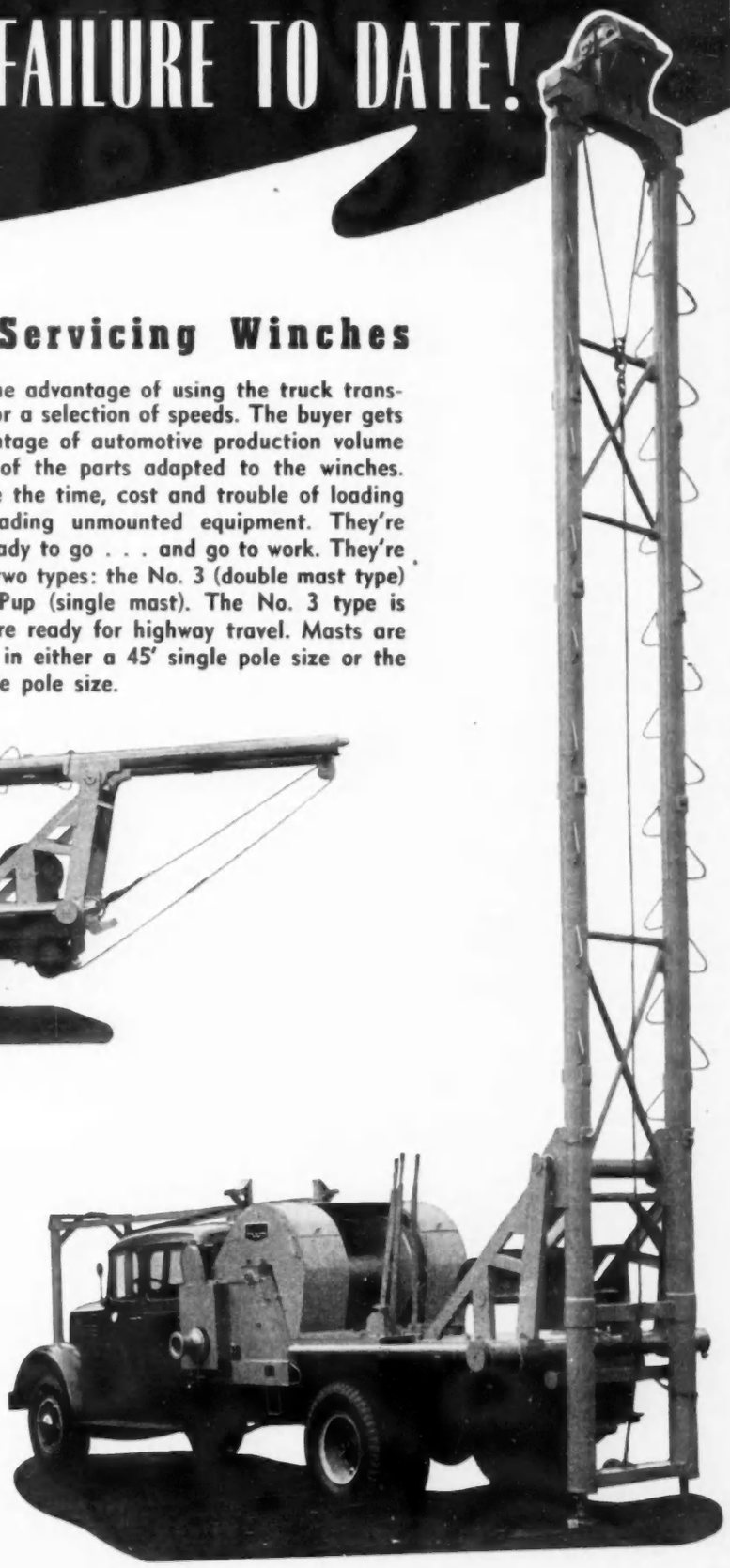
NOT A MECHANICAL FAILURE TO DATE!

That's the RECORD OF OCS Servicing Winches

Here's your best buy in truck type servicing winches, as proved by their dependable performance in all kinds of service under every possible condition since they were introduced in 1940. To date our records show not a single mechanical failure in any part of an OCS Winch or Power Takeoff despite the fact that many of them have been in service for over three years.

They're complete units, as bought, and improvements now well known in OCS Servicing Winches show they've eliminated such mechanical difficulties as insufficient radiation, a one-time problem in truck mounted winches. They provide the advantage of using the truck transmission for a selection of speeds. The buyer gets the advantage of automotive production volume of many of the parts adapted to the winches. They save the time, cost and trouble of loading and unloading unmounted equipment. They're always ready to go . . . and go to work. They're made in two types: the No. 3 (double mast type) and the Pup (single mast). The No. 3 type is shown here ready for highway travel. Masts are available in either a 45' single pole size or the 60' double pole size.





Get full details from your new Composite Catalog, now ready for distribution. Better still, contact your Parkersburg Representative.

THE PARKERSBURG RIG AND REEL CO

THE PARKERSBURG RIG & REEL COMPANY

PARKERSBURG, W. VA.

General Sales Office: Coffeyville, Kan.

Dallas Houston Tulsa Los Angeles New York

PARKERSBURG

Lans 2999 ft, Cherty cong 3341 ft, Viola 3414 ft, Simp 3472 ft, Arb 3523 ft, Por ns 3523-29 ft, abnd 3560 ft.

Isern Bros.' Whitt 1, ne nw 11-14s-12w, Top 2625 ft, Lans 2916 ft, Cherty cong 3249 ft, Arb 3287 ft, abnd 3308 ft.

Sumner County—Failure: Barnsdall's Gilbert 1, se se nw 35-20s-1e, Stalnaker 2371 ft, KC 2705 ft, Miss 3303 ft, Base Miss 3570 ft, Simp 3601 ft, sso 3601-06 ft, Arb 3683 ft, abnd 4156 ft.

KENTUCKY

Hancock County: J. C. Ellis' W. C. Smith 13, 20-O-34, intake well, abnd 674 ft.

Ohio County: Mecca Oil Co.'s Patton & Keith 1, 25-M-32, abnd 720 ft.

Union County: Sun's Tapp-Drury 1, 10-O-20, O'H 2510-13 ft, McCl 2555-60 ft, 125 bbls, 2564 ft.

Hiawatha's City of Uniontown 3, 20-P-19, Walt 1715-30 ft, 30 bbls, 1730 ft.

Webster County: Carter Oil Co.'s Otho Bobb 1, 8-N-23, abnd 2802 ft.

KENTUCKY WILDCATS

Butler County—Failure: W. A. Schulter's W. Givens 1 (3), 14-H-33, abnd 429 ft.

Daviess County — Failure: Carl Robinson's Mrs. A. Johnson 1, 5-O-31, abnd 1580 ft.

Ohio County—Failure: Sohio's Everly-Hughart 1, 13-L-29, abnd 2012 ft.

Union County—Failures: (Old well deepened) Sun's G. I. Drury 1, 20-O-18, otd 2114½ ft, abnd 2677 ft.

Kingwood's Lilly 1, 21-O-19, otd 2801 ft, pb and abnd 988 ft.

Vanderburgh County—Failure: Delta Drlg.-Cochran's Mann 2, 22-R-23, abnd 2159 ft.

NORTH LOUISIANA

Bossier Parish — Sligo: Triangle Drilling Co.'s Sheppard B-2, 20-17n-11w, small pumper.

Triangle Drilling Co.'s Sheppard A-2, 20-17n-11w, small pumper.

Caddo Parish—Caddo-Pine Island: A. Paul Gilbert's Lewis and Green 1, abnd 1690 ft.

Davis and Hart's Sample 1, 32-21n-15w, small pumper, 1649 ft.

Davis and Hart's Muslow C-1, 32-21n-15w, small pumper, 1649 ft.

SOUTH LOUISIANA

East Baton Rouge Parish—University: William Hellis' LSU 1-B, 4399 ft n 81° 48 mins w, th 1950 ft s 8° 12 mins w fr ne cor 65-7s-1w, 7-in 9899 ft, perf 9630-35 ft, flow 273 bbls, ⅛-in, td 9918 ft.

Evangeline Parish—Ville Platte: Continental's Foret 1, 1866 ft s 51° 15 mins e on swl sec 43, 330 ft n 38° 45 mins e fr w cor 43-3s-2e, abnd 10,400 ft.

SOUTH LOUISIANA WILDCATS

Calcasieu Parish—Failure: W. T. Burton's Erwin Est. 1, South Lake Charles, 40-ac tr, 17-11s-8w, 7-in 10,811 ft, abnd 12,043 ft.

Evangeline Parish—Discovery: Continental-Humble's Pardee Lumber 3, 1675 ft s and 987 ft w of ne cor 20-4s-1w, 6-in 11,589 ft, perf 9960-10,000 ft, flow 156 bbls 54-gr, 17/64-in, to 1050, td 11,589 ft, opens Reddell field.

MICHIGAN

Allegan County—Fillmore: C. J. Smith's Van Denbelt 1, nw ne nw 13-4n-15w, Traverse dry, td 1630 ft.

Bay County—Kawkawlin: Gulf's Meyer 2, n½ sw nw 12-14n-4e, Dundee, pump and flow 59 bbls, td 2896 ft.

Mason County—Logan: Walahalla Oil Co.'s Young 2, nw se nw 9-17n-15w, Sylvania sd, pump 3 bbls, td 3295 ft.

Mecosta County—Fork: Sun's Ralph 3, s½ nw nw 9-16n-7w, Dundee dry, td 3854 ft.

Montcalm County—Pine: Gentry Engineering Co.'s Christensen 2, se ne ne 29-11n-8w, Traverse dry, td 3321 ft.

Osceola County—Evart: Dow Chemical Co.'s Ross 16, c ne 28-18n-8w, Stray sd, 1,600,000 gas, td 1405 ft.

Van Buren County—North Bangor: Grimes & Son's Pifer 3, se nw sw 9-2s-16w, Traverse, flow 190 bbls 12 hrs, td 1010 ft.

MICHIGAN WILDCATS

Arenac County — Failure: Ervin Major's Proulx 1, ne ne nw 16-18n-4e, Dundee, td 2890 ft.

Gladwin County—Failure: Basin Oil Co.'s Calkins 1, s½ se nw 35-18n-1e, Dundee 3489 ft, td 3600 ft.

Montcalm County—Failure: Southwest Dev. Co.'s Hopkins 1, ne ne nw 18-11n-6w, stray sd, td 1361 ft.

Oceana County — Failure: W. K. Swan's Skidmore 2, n½ nw sw 10-16n-16w, Monroe 2518 ft, td 3336 ft.

Osceola County—Failure: Sun's Richardson 3, s½ nw se 15-18n-9w, Dundee 3875 ft, td 4086 ft.

Roscommon County—Failure: Rowmor and Leonard's Fee 1, s½ se sw 16-24n-2w, Dundee, td 4507 ft.

NEW MEXICO

Eddy County: Grayburg Oil Co.'s Keeley 8-A, c nw se 24-17s-29e, flow 682 bbls, lime 2895-2925 ft.

Lea County—Arrowhead: Gulf's Mattern 12-E, c ne ne 12-22s-36e, flow 526 bbls, ¾-in, acid 2000 gals 3705-55 ft.

Lea County—Eunice: State-Janda 2-F, c nw sw 4-22s-36e, elev 3602 ft, flow 248 bbls, 2-in, acid 4500 gals, shot 150 qts 3824-84 ft, 3885 ft.

Lea County — Vacuum: Texas Co.'s State 13-R, c se se 1-18s-34e, elev 3993 ft, flow 935 bbls, 2-in, 4600-4680 ft.

NEW MEXICO WILDCATS

Eddy County—Failure: Forrest E. Levers et al's Levers 2, c ne nw 26-20s-28e, elev 3238 ft, abnd 1062 ft.

Lea County—Failure: N. G. Penrose's Crozier 1, c sw nw 1-20s-33e, elev 3593 ft, anhydrite 1398 ft, salt 1555-3150 ft, abnd 3683 ft.

OKLAHOMA

Caddo County — Cement: Phillips' Hartshorne 2, ne nw ne 2-5n-10w, Medrano 5786-5893 ft, sd 5903-23 ft, pb 5968 ft, flow 375 bbls in 14 hrs, 6007 ft.

Caddo County—Un-named: Palmer's Sterba 5, se ne sw 35-6n-10w, Wade 5272-5335 ft, 10,000 gas, 6000 ft.

Darby Pet.'s Dixon 1, nw sw nw 35-6n-10w, Medrano 4713-4854 ft, Marchand 5142-5218 ft, pb 5360 ft, perf in Marchand and Medrano, 10,500,000 gas, 6195 ft.

Carter County — Tussy: Allied Materials' Williams 1, sw se ne 9-1s-3w, Tussy sd 2760-2824 ft, flow 102 bbls, 2908 ft.

Comanche County—Ft. Sill: Mid-Continent's Cline 2, nw nw nw 17-3n-10w, sd 814-32 ft, shot 20 qts, pump 2 bbls, 1357 ft.

Mid-Continent's Cline 3, se ne nw 17-3n-10w, sand 595-605 ft, 425,000 gas, 1500 ft.

Creek County — W. Arno: Wilcox O&G's Benton 1, se nw nw 35-14n-7e, Prue 2563 ft, pb 2600 ft, shot 40 qts, sg, abnd 3600 ft.

Creek County—Deep Fork: Tibbins' Wilson 9, se ne ne 18-14n-9e, Prue 2370 ft, shot 80 qts, flow 50 bbls, 2408 ft.

Creek County—Glenn: Gulf's M. W. Drew 30, se se se 6-17n-12e, Glenn 1445 ft, input well, 1616 ft.

Creek County—Un-named: Gulf's Anderson 34, nw ne ne 9-17n-12e, Glenn 1551-1707 ft, input well, 1712 ft.

Sinclair Prairie's L. L. Berryhill 52, c se se 16-17n-12e, Glenn 1417-1584 ft, input well, 1589 ft.

Garvin County—Pauls Valley: Pure's Teter 10, se nw se 31-4n-1e, Penn Zone 3867 ft, flow 336.80 bbls, 4145 ft.

Texas Co.'s Huckaby "A" 2, nw nw se 25-4n-1w, Bromide Prod. flow 2332 bbls, 4046 ft.

Texas Co.'s O. W. Patchell 2, nw se se 25-4n-1w, Penn flow 2735.60 bbls, Bromide flow 952.64 bbls, 4068 ft.

Garvin County—Un-named: Pure-Continental's McCrummen & Collins 1, nw ne sw 25-4n-1w, Penn sd prod 3914-64 ft, dual packer at 3968 ft, flow 2742 bbls, Bromide Prod 4002 ft, flow 3140-88 bbls oil, 3,345,800 gas, 4066 ft.

Cities Service's Wimberly "B" 1, se se ne 26-4n-1w, Penn sd 4037-49 ft, flow 151 bbls, Bromide 4091 ft, flow 520 bbls oil, 466,000 gas, 5% salt wtr, 4105 ft.

Jackson County—Altus: N. D. Goldsmith's Walls 3, nw sw nw 11-1n-20w, Granite Wash 1350 ft, pump 30 bbls, 1410 ft.

Jackson County — Un-named: Mathews & Thorpe's Robertson 2, ne sw nw 14-1n-20w, Granite Wash 1384 ft, pump 48 bbls, 1405 ft.

Kay County—Un-named: Prunty Prod. Co.'s Buessing 1, ne ne se 28-27n-1e, Arb 3973 ft, Miss 3667 ft, td 4016 ft, pb 3653 ft.

Lincoln County — S. Wilzetta: Amerada's Zimmerman 2, se nw nw 10-12n-5e, Prue 3343 ft, pump 223 bbls oil, 40 bbls wtr, td 3800 ft, pb 3363 ft.

Lincoln County — Chandler: Great Lakes Carbon's Ashton 2, nw nw se 3-14n-3e, Bart 4413 ft, shot 50 qts, pump 60 bbls, 4430 ft.

Okfuskee County—Gregory: Adelson's Crawley 1, c ne se 36-10n-11e, Booch 2105 ft, 2000 gas, 2129 ft.

Okfuskee County—Okemah: Grimes & O'Neal's Fletcher 1A, nw se ne 25-11n-9e, sand 1535-64 ft, pb 1560 ft, shot 40 qts, abnd 1564 ft.

Okfuskee County — NW Bearden: C. W. Titus' Palmer 1, c sw sw 31-11n-9e, Cromwell 3414 ft, flow 246 bbls oil, 10 bbls wtr, 3422 ft.

Okfuskee County—NE Dill: Mid-Continent's Miller 1, ne ne se 24-12n-8e, Pitkin 3508 ft, ns, abnd 3604 ft.

Oklahoma County—Un-named: Sohio's Cargile 1, c se se 30-14n-4w, Bart 6735-49 ft, shot 40 qts, flow 80 bbls, td 7585 ft, pb 6765 ft.

Okmulgee County—Norris: Grumm's Eubank 2A, se sw nw 17-13n-14e, sand 500-10 ft, abnd 510 ft.

Okmulgee County—Bald Hill: A. L. Wilson's W. Scott 5A, nw sw sw 1-14n-14e, salt sd 617-18 ft, 30,000 gas, 618 ft.

Okmulgee County—S. Beggs: R. H. Pierce's Fewel 1, sw se sw 25-15n-11e, Wilcox 2782 ft, shot 45 qts, pump 15 bbls, 2801 ft.

Okmulgee County — Pollyanna: Nat'l Pet. Co.'s Thompson 5, se sw nw 33-16n-11e, Wilcox 2986 ft, shot 10 qts, pump 30 bbls, 2996 ft.

Osage County — Osage City: Ohio's (Unnamed) 10, nw sw sw 36-22n-8e, sand 498-520 ft, shot 20 qts, pump 12 bbls, 520 ft.

Osage County—S. Burbank: Phillips (Unnamed) D-17, sw nw sw 16-26n-6e, Burbank 2973 ft, input well, 2971 ft.

Osage County—S. Hickory Creek: Denman's (Un-named) 5, ne se sw 9-28n-11e, sand 1033-68 ft, swab 20 bbls, 1068 ft.

Osage County—Un-named: Blackwell's (Unnamed) 4, sw nw sw 10-28n-11e, sand 1520-34 ft, HFW, abnd 1534 ft.

Payne County—Norfolk: Wood's Carter 1, nw nw se 12-18n-5e, Miss 3450-63 ft, NS, abnd 3463 ft.

Stephens County—W. Duncan: T. H. McCasland's Clarkson 1A, ne sw sw 30-1s-8w, sand 2362-77 ft, perf, pump 40 bbls oil, 10 bbls wtr, 2594 ft.

OKLAHOMA WELLS DEEPENED

Lincoln County—N. McLoud: Phillips' School Land 1, nw ne ne 16-12n-2e, otd 5621 ft, 2 Wilcox 2698 ft, hold filled 1500 ft water, abnd 5710 ft.

Okfuskee County—Olympic: Manahan's Bunner 2, sw se ne 25-10n-8e, otd 1825 ft, Senora sd 1797 ft, pb 1844 ft, 500 gals acid, pump 11 bbls, td 1846 ft.

Okmulgee County—Un-named: W. W. Wilson's Schacht 9A, ne se se 22-14n-14e, otd 1208 ft, Glenn 1719 ft, shot 10 qts, pump 6 bbls, 1741 ft.

Pawnee County — Lauderdale: Major Oil Co.'s C. F. Baker "B" 1, n½ ne nw 9-20n-8e, otd 2495 ft, sand 2370-2400 ft, pump 17 bbls oil, 30 bbls wtr, td 2995 ft, pb 2470 ft.

OKLAHOMA WILDCATS

Comanche County—Discovery: H. N. Conley's Hayes 1, se se ne 22-4n-11w, perf 20, 885-903 ft, 558,000 gas, 210 lbs, 1092 ft.

Comanche County—Failure: English Drlg. Co.'s Warthen 1, nw nw nw 4-1n-12w, lime 1675 ft, ns, abnd 1675 ft.

Lincoln County—Failures: Mid-Continent's Markwell 1, sw sw ne 32-12n-4e, 1st Wilcox 5592 ft, 2 Wx 5670 ft, Cd 5676-85 ft, ns, abnd 5685 ft.

Danciger's Katteredge 1, se se ne 7-12n-5e, Bart 4285 ft, shot 50 qts 4185-4245 ft, vsso, abnd 4307 ft.

McIntosh County — Failure: W. H. Pine, Adm.'s Lynn 1, se sw sw 35-11n-15e, salt sd 504-600 ft, abnd 625 ft.

Pottawatomie County—Discovery: Watchorn O&G's Sorrell 1, nw nw se 20-6n-3e, flowed 573 bbls 38.8-gr from Viola, 2 perf 4140 ft, 4695 ft.

Texas County—Discovery: Pure's Cox 1, se sw se 15-5n-8e cm, 19 mcfg 4670-4759 ft, 6280 ft.

WEST CENTRAL TEXAS

Jones County — Wimberly: Clark - Cowden Drlg. Corp.'s Mashburn 4, 385 ft snl and 910 ft ewl s½ blk 85, DeWitt CSL, dual well, flow 600 bbls ¾ in, and 4000 gals upper pay 2225-45 ft; flow 540 bbls ¾-in, acid 1500 gals lower pay 2567-74 ft.

Shackelford County: C. B. Christie et al's Newell 1-B, 965 ft ewl and 1400 ft nsl T&P 13, blk 11, pump 18 bbls, sand 1369-78 ft.

Roeser-Pendleton-Continental's Cook 5-A-89, 345 ft snl and 1778 ft wel se E.T. Ry, sec 89, abnd 1603 ft.

WEST CENTRAL TEXAS WELLS DEEPENED

Jones County—Wimberly: North American Oil's Mashburn 4, 330 ft out nw cor s½ blk 86, otd 2342 ft, dual well, flow 1632 bbls, ¾-in, acid 1500 gals 2468-2500 ft, td 2516 ft.

E. L. Wilson et al's Mashburn 1, 330 ft nsl 395 ft wel e½ of n½ blk 86, otd 2400 ft, dual well, flow 1096 bbls, ¾-in, acid 1000 gals 2484-2512 ft, td 2527 ft.

WEST CENTRAL TEXAS WILDCATS

Jones County—Failure: Great Lakes Carbon Corp.'s Humphreys 1, 1160 ft nsl 660 ft ewl H&TC 2, blk 4, elev 1569 ft, Palo Pinto 3520 ft, lime 4160 ft, Bend 4950 ft, jkd and abnd 5250 ft.

Shackelford County—Failure: Harry Hines et al's Dawson-Conway 1, 330 ft out nw cor w-80 ac of E.T. Ry. sec 194, elev 1544 ft, abnd 1925 ft.

WEST TEXAS

Andrews County—Fullerton: Mid-Continent's University 1-B, c nw ne sec 16, blk 13, 2½ mi se prod, elev 3299 ft, brown lime 4120 ft, San Andres 4340 ft, Clear Fork 6878-7177 ft, flow 179 bbls, 3/16-in, acid 10,000 gals, td 7458 ft, pb 7177 ft.

Crane County—Sand Hills: Magnolia's Lea 25, c sw ne PSL 9, blk B-32, flow 592 bbls, ½-in, 3000 gals acid in Clear Fork, 4452-79 ft, td 4651 ft.

Ector County—Goldsmith: Stanolind's Cowden 1-D, 1651 ft nsl 330 ft wel, PSL 13, blk A, flow 306 bbls, ½-in, 2700 gals acid 4130-56 ft.

Ector County—North Cowden: Stanolind's Midland Farms 1, Unit 3, 2209 ft s 2044 ft e of ne cor G&MMB&A 46, blk 42, T-1-N, flow 805 bbls, shot 400 qts 4615-4750 ft.

Gaines County—Wasson: Bay Pet. Corp.'s Wilson-Yeager 1, nw nw ne PSL 40, blk AX, abnd 5055 ft.

Gaines County — Seminole: Magnolia-Atlantic's H. & J. 8-193, c nw se W.T. Ry 193, blk G, flow 476 bbls, ½-in, shot 150 qts 5125-5208 ft.

Hockley County—Slaughter: L. M. Glasco et al's Mallet 29-C, 580 ft out se cor lab 4, lge 48, Edwards CSL, flow 378 bbls, 12,000 gals acid 4857-4956 ft.

Tevis F. Morrow's Mallet 52, 580 ft out nw cor lab 3, lge 48, Edwards CSL, flow 387 bbls, 12,000 gals acid 4884-4926 ft.

Howard County: Continental-Group 1 Oil

Comparison of

PBX ARTIFICIAL RUBBER and NATURAL RUBBER

. . . used in Protectors

The range of normal expansion of rubber used in Drill Pipe and Casing Protectors is from 100% to 200%.

Tests made of Patterson-Ballagh's new PBX Artificial Rubber prove its ability to permit an expansion of far greater than the extreme requirement of 200% without harm.

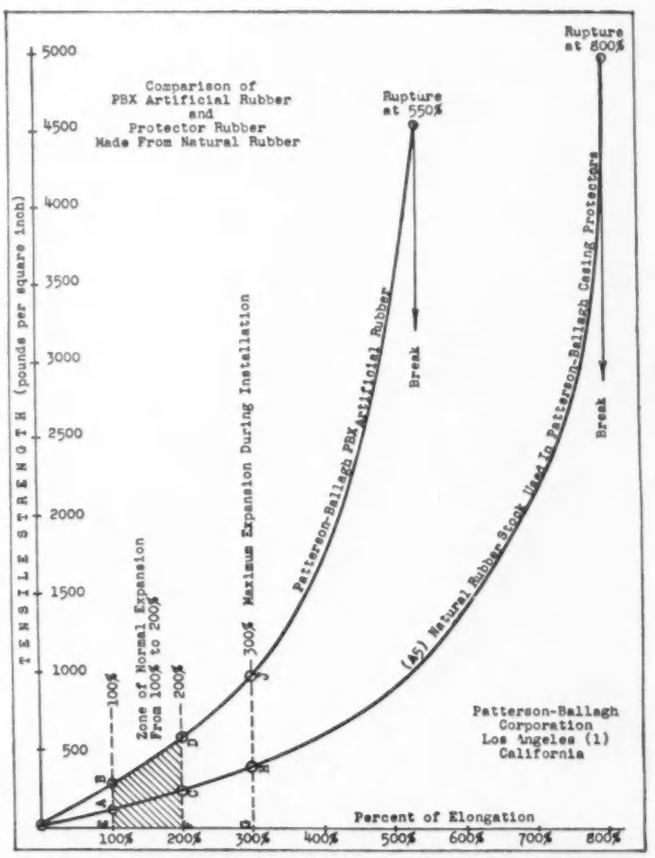
It is true that artificial rubber will rupture at a lower breaking point than natural rubber. Rupture of PBX rubber occurs at 550% elongation at a tensile stress of 3600 pounds per square inch. But no such strain is ever imposed on a Protector.

Within a range of stress in actual service on the drill pipe the tensile characteristics of PBX rubber are actually superior to natural rubber, as indicated in the accompanying graph.

Consequently, PBX Protectors embody new qualities of stamina far beyond the popular expectations of artificial rubber.

This is good news to the hundreds of Patterson-Ballagh customers who have been fearful that when stocks of natural rubber became exhausted there would be no more Protectors for the duration.

Now we can give assurance of the continuarion of a supply of dependable artificial rubber, compounded by us to meet the severe conditions encountered in oil fields.



Comparison of the strength characteristics of rubber used in Products made of PBX Artificial Rubber and the same Products when made of Natural Rubber.

PBX Artificial Rubber is now being used in the manufacture of Patterson-Ballagh Protectors, Pipe Wipers, Wire Line Wipers, Wire Line Sucker Rod Wipers, Mud Gun Nozzles, Guides, and Swivel Bail Bumpers.

PATTERSON-BALLAGH Corporation • Los Angeles 1 • Houston 10 • New York City 6

PATTERSON-BALLAGH PBX PROTECTORS

Corp.'s Settles 1-S, nw sw ne W&NW 133, blk 29, pump 109 bbls, sand 1260-95 ft.

Howard County—Iatan-East Howard: Stanolind's Echols 1-a, 1001 ft snl 380 ft wel T&P 6, blk 30, T-1-S, pump 388 bbls, lime 2450-85 ft.

Stanolind's Texas Land & Mtg. Co.-Shasta 15, 390 ft snl 2200 ft ewl T&P 5, blk 30, T-1-S, pump 176 bbls, shot 840 qts 2455-2697 ft.

Ward County — Monahans: Shell's Sealy-Smith 4, 660 ft snl 510 ft wel G&MMB&A 39, blk A, elev 2727 ft, jkd and abnd 1617 ft.

Winkler County—Emperor: Skelly's Halley 63, PSL 13, blk B-12, flow 278 bbls, 5/16-in, shot 207 qts 2775-2840 ft, td 2870 ft.

WEST TEXAS WELL DEEPENED

Winkler County — Keystone: Richardson & Bass' Jenkins-Conoco 1, 440 ft out sw cor PSL 13, blk 77, otd 3368 ft, flow 55 bbls, shot 160 qts 3390-3460 ft, td 3480 ft.

WEST TEXAS WILDCATS

Pecos County—New Oil Pools: E. Russell Lloyd et al's Powell 1, c w¼ of s¼ H&GN 76, blk 10, elev 2436 ft, flow 88 bbls 35.2-gr, ratio 440/1, ¼-in, natural, Permian Queen sand 1649-61 ft.

Yoakum County—Failures: Hugh W. Stoddard, tr's Kendrick-Shell 1, se se se sec 748, blk D, J. H. Gibson sur, elev 3468 ft, top brown lime 4600 ft, San Andres 5060 ft, abnd 7995 ft.

SOUTHWEST TEXAS

Duval County — Conoco-Driscoll: Continental's Driscoll 18-B, 4300 ft fr nl & 1800 ft fr el, U. Lott sur, abnd 3100 ft.

Duval County—Peters: Sawnie Robertson's Peters 1, 380 ft fr nl & 335 ft fr wl, GB&CNG sur 31, se flank, abnd 2475 ft.

Jim Hogg County — Armstrong: Humble's Strohman 1, 524 ft fr nl & 2170 ft fr el, D. C. Strohman sur 300, abnd 3307 ft.

Starr County—Ross: W. L. Goldston's Mayorga 2, 330 ft fr s&el share 35-A, J. S. de la Garza por 88, 5½-in 2583 ft, perf several levels, abnd 2850 ft.

"Count on us, son...
BOTTOM WATER SEEPAGE WON'T
SLOW DOWN OUR PRODUCTION!"
You, too, can be confident bottom water shut-downs won't cause costly delays in your production of the oil our war effort so urgently needs. When you strike bottom water, quickly tamp a cartridge of Eagle Lead Wool into the hole. The fine, flexible strands of this metallic wool effectively pack every crack and corner, become a solid, snug-fitting plug, permanent and non-corrosive. Economical Eagle Lead Wool is rapidly installed in Eagle Wire Containers, sized to fit all casings. Safeguard against bottom water sabotage — order through your jobber today!
EAGLE
1843 EP 1943
PICHER
EAGLE LEAD WOOL
Seals off Bottom Water - Keeps 'em Flowing!
The EAGLE-PICHER LEAD COMPANY · Cincinnati, Ohio

These 3 Eagle Bearing Metals meet most requirements . . .
Eagle Dreadnaught — for extreme speed and pressure conditions
Eagle Outlasta — for medium speed and pressure conditions
Eagle Durable — for low speed and pressure conditions

Starr County—Yturria: Sun's Yturria Land 1-B, 714 ft fr e&wl & 610 ft fr sl 620-ac lse, Y. Trevino por 100, ne flank, abnd 9602 ft.

SOUTHWEST TEXAS NEW PAY

Starr County—North Sun: Sun's Laurel 3, 2500 ft fr wl & 1000 ft fr nl se 485-ac share 3, La Sal Colorado gr, 2295-ac lse, 5½-in 8643 ft, perf 8470-72 ft & 8478-80 ft, flow 20 bbls, 3/16-in, td 8644 ft.

SOUTHWEST TEXAS WILDCAT

Webb County—Failure: O. W. Killam's Garcia 1, 5 mi se Mirando City, blk 38, sur 592, Los Ajuelos gr, abnd 4849 ft.

SOUTH CENTRAL TEXAS

Caldwell County — Gas Ridge: Southwest Drilling Co.'s Mueller 2-A, 319-ac tr, Lucas Munoz sur 86, temp abnd 420 ft.

SOUTH CENTRAL TEXAS WILDCATS

Bexar County—Failure: W. T. Montgomery's Fee 1, 967-ac tr, Rafael Alderte gr 12, 5 mi ne LaCoste, abnd 1350 ft.

Caldwell County—Failure: Churchill Oil Co.'s Mercer 1, 660 ft fr nwl & 660 ft fr nel sw 172-ac, Andrew Churchill Lge, abnd 2026 ft.

Milam County—Failure: Standard of Texas' Smith 1, 214-ac tr out of 733-ac, Daniel B. Friar Lge, 6 mi n Gause, abnd 5900 ft.

LOWER TEXAS GULF COAST

Bee County—South Caesar: Blanco Oil & Al Buchanan's Slick 2, 467 ft fr sw & 1820 ft fr sel 112-ac tr, blk 34, P. B. Butler subdvn Medio Ranch, E. Stapp sur, 5½-in 6600 ft, perf 6588-89 ft, flow 16 bbls, 5/64-in, td 6683 ft.

G. W. Strake's Parker 1, 523 ft fr nw & 467 ft fr swl Thomas M. Whittington sur, 100-ac tr, 5½-in 6541 ft, perf 6522-26 ft, flow 100 bbls, ⅛-in, td 6550 ft.

Jackson County—Collier: Texas Co.'s Manley 1, 469 ft fr nel & 330 ft fr sel of ne 25-ac of 148-ac, James Kerr sur, abnd 3520 ft.

Jackson County — North LaWard: Cities Service's Graves 5, 1650 ft fr w&sl of 241-ac, Pickering Rch, Patrick Scott sur, 5½-in 5236 ft, perf 5208-22 ft, flow 259 bbls, 3/16-in, td 5235 ft.

Jim Wells County — Seeligson: Magnolia's Seeligson 49, 15,514 ft fr sl & 2310 ft fr el, A. Ramirez gr, 7-in 6790 ft, perf 5225-29 ft, flow 86 bbls, 7/64-in, td 6998 ft.

Live Oak County — Oakville: Henderson Coquat's Reagan 4, 767 ft fr nel & 330 ft fr sel 319-ac lse, S. McGloin sur, 5½-in 1905 ft, shut in, td 1905 ft.

San Patricio County—East White Point: Republic Natural Gas Co.'s Rachal 46, 1281-ac lse, M. M. Flores gr, 5½-in 5795 ft, perf 5642-52 ft, flow 251 bbls, 13/64-in, td 5905 ft.

LOWER TEXAS COAST NEW PAY

Victoria County — Placedo: Sunray Oil's Sklar 1, 330 ft fr nel & 1600 ft fr nwl 104-ac lse blk 5, SA&MG sur 7, 7-in 6820 ft, perf 6699-6702 ft, flow 65 bbls, ⅛-in, td 7010 ft.

LOWER TEXAS COAST WILDCATS

Bee County—Failure: Dirks Bros.' Dugat 2-B, 320-ac lse, J. Poitevent sur 1, abnd 7510 ft.

Jackson County—Failure: Hewit & Dougherty's Knipling 1, lot 29, Pickering Rch, Patrick Scott sur, abnd 6535 ft.

Jim Wells County—Failure: Smith & Moser's Allen 1, 608-ac tr, 2 mi sw Alfred, abnd 5432 ft.

Kleberg County—Failure: Charles Snellstrom's Phillips 1, sec 6, Kleberg subdvn, L. L. de la Garza gr, abnd 7322 ft.

Live Oak County—Failure: W. Earl Rowe's Meyers 1, 60-ac tr, Refugio CSL sur, abnd 4626 ft.

TEXAS GULF COAST

Chambers County—Seabreeze: Sun's Anderson 1, 40-ac unit, HT&B sur sec 101, abnd 9649 ft.

Brazoria County—Manvel: Skelly's Bankers Mortgage 1, 40-ac unit, lots 58, 59, 74 & 75 out of E. Little sur & ACH&B sur 92, abnd 5122 ft.

Jefferson County—Stowell: Glenn H. McCarthy's Ehrlich 1, 163-ac tr, lot 46, Theo Koch subdvn, L. Lopez sur, dual completion, 5½-in 8610 ft, perf 8312-15 ft, flow 152 bbls, 11/64-in; perf 8398-8402 ft, flow 140 bbls, 9/64-in, td 9311 ft.

Texas Co.'s Brauer 1, 420 ft fr nl & 330 ft fr el sw¼ lot 21, Theo Koch subdvn, Lopez sur, 5½-in 7700 ft, perf 7656-68 ft, flow 387 bbls, 12/64-in, td 7701 ft.

Orange County—Port Neches: Texas Co.'s Orange National Bank 4, 150-ac tr, east side, 7-in 2958 ft, perf 2293-2308 ft, flow 109 bbls, 12/64-in, td 7153 ft.

Waller County—Katy: Stanolind's Pattison 3, 660 ft fr s&el sec 94, J. M. Bennett sur, 637-ac tr, abnd 7539 ft.

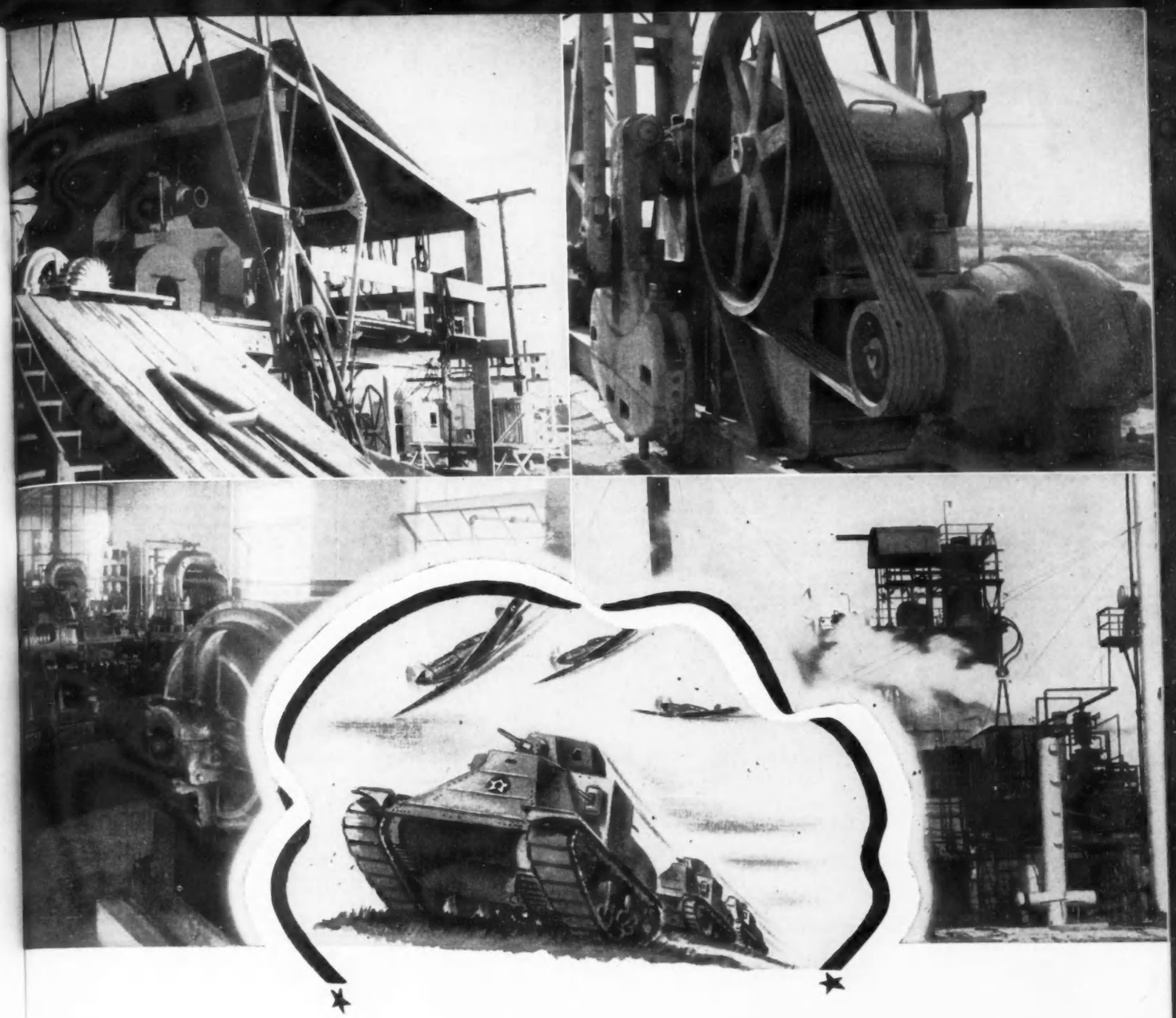
TEXAS GULF COAST WILDCATS

Jasper County—Failure: Sun's Richardson 1, Antioch prospect, 100-ac tr, John R. Saulsbury sur, abnd 8341 ft.

Madison County—Failure: Continental's Adams 1, 165-ac tr, Joshua Robbins sur, abnd 5042 ft.

EAST TEXAS

Cherokee County—Lone Star: Tom G. Shaw et al's Bowling 2, 4050 ft ewl 3250 ft nsl, W. H. Walters sur, elev 377 ft, Woodbine 3989



OIL! GASOLINE! That's What They Need

LET'S GIVE 'EM PLENTY OF THIS "FIGHTING POWER"

The Petroleum Industry is now being called upon to perform its greatest task . . . that of supplying sufficient quantities of oil and gasoline for invasion purposes. *An unprecedented assignment!*

By no measure of calculations can anyone figure precisely how much oil and gasoline will be needed to win this war, but the important factor is to give 'em all they need, when and where they need it, and without delay!

The Utility Electric Power Companies have and will continue to cooperate to their fullest extent toward this end. Through their foresightedness, they have planned for sufficient capacity, which will help to produce all the "fighting power" needed. Just let us know when we can be of greater service. Our goal is "VICTORY!"

Use Utility Electric Power!

PETROLEUM ELECTRIC POWER ASSOCIATION

Box 1498, Oklahoma City, Oklahoma

ft, pump 61 bbls, 85% wtr, perf 3990-92 ft, td 3993 ft.

Smith County—Chapel Hill: Chapel Hill Gas System's Bradley 1, 2700 ft ewl 6050 ft nsl, Thos. P. Payne sur, elev 502 ft, Hill porosity 7453 ft, 4,400,000 gas, 60 bbls distillate per million, perf 7454-7504 ft, td 7615 ft.

Texas Co.'s Walton 2, 660 ft out sw cor 172-ac lse, P. G. Landers sur, elev 428 ft, Pettit 8019 ft, flow 297 bbls 42.8-gr, ¼-in, 4000 gals acid, perf 8072-96 ft, td 8263 ft.

Wood County—Hawkins: Humble's Bryan 2-E, 3000 ft wel 2300 ft nsl, W. Parker sur, elev 423 ft, Woodbine 4409 ft, Georgetown 4553 ft, flow 16 bbls 27-gr, 111,000/1, ¼-in, perf Woodbine 4501-53 ft, td 4583 ft.

Humble's McLain 1-B, 2300 ft fr m/s/s 1620 ft fr m/e/w lines, J. P. Mosely sur, elev 367 ft, Woodbine 4224 ft, Georgetown 4710 ft, flow 220 bbls, ¼-in, perf 4638-50 ft, td 4736 ft.

Wood County—Manziel: Magnolia's Taylor 1, 1385 ft snl 330 ft wel, John Polk sur, elev 472 ft, Paluxy 6268 ft, pay 6328-63 ft, flow 517 bbls 32.2-gr, ¼-in, perf 6327-47 ft, td 6395 ft.

Sun's Scoggin 1, 3410 ft snl 3350 ft wel, Sam Burch sur, elev 424 ft, Paluxy 6264 ft, sand 6278 ft, Glen Rose 6610 ft, flow 858 bbls 27.8-gr, 90/1, ¼-in, perf 6345-57 ft, td 6631 ft.

Wood County—Quitman: Amerada's Green 1, 1200 ft snl 2525 ft ewl, S. G. Purse sur, elev 465 ft, Paluxy 6296 ft, sand 6306 ft, flow 629 bbls 42.6-gr, 164/1 gas, ¼-in, perf 6305-50 ft, td 6360 ft.

Shell's Watson 1, 2450 ft wel 4700 ft snl, E. Goodsir sur, elev 408 ft, Paluxy 6210 ft, sand 6219-75 ft, flow 833 bbls, 229/1, ¼-in, perf 6216-70 ft, td 6411 ft.

Oil City's Good Castings are enlisted in the Battle of Production.

OIL CITY BRASS WORKS
FOUNDERS · MANUFACTURERS · MACHINISTS
Beaumont, Texas, U.S.A.

INDUSTRIAL
PACKINGS . . . GASKETS

HIGH PRESSURE PACKING
for stuffing box work against steam or air. Made of long fibre asbestos in a cushion that will not vulcanize. Lubricated by our own special process. Made in Style No. 200, ring; Style No. 201, spiral; and Style No. 202, coil.

Write or wire
Sterling Packing & Gasket Company
1701 Nance, Houston, Texas

Sterling
MEANS QUALITY

EAST TEXAS WILDCATS

Houston County—Failure: C. B. Culmore et al's Stephens 1, 330 ft out ne cor 45.9-ac lse, John Forbes sur, elev 186 ft, abnd 3300 ft.

Hunt County—Failure: Stanolind's Wilkins 1, 600 ft wel 2842 ft snl, E. F. Anderson sur, 2 mi sw Commerce, elev 494 ft, woodbine 3672 ft, cut fault 3738 ft, Goodland 4370 ft, Trinity series 4412 ft, Paluxy 4416 ft, abnd 4454 ft.

NORTH TEXAS

Archer County: M. W. Blair Oil Co's Carter 1, 150 ft nsl and 1000 ft ewl sec 34, blk 5, Clark-Plumb sur, abnd 1151 ft.

M. W. Blair Oil Co's Henry 1, 2790 ft wel and 950 ft snl sec 35, blk 5, Clark-Plumb sur, pump 39 bbls, sand 916-19 ft.

F. G. Cowden et al's Colgan 1, 1146 ft snl and 330 ft wel J. F. Martin sur A-276, abnd 1500 ft.

J. A. McCarty-J. P. Coleman's Taylor 2-A, 660 ft nsl and 330 ft wel lot 9, ATNCL sec 17, top KMA 3780 ft, Bend 4631 ft, Ellenburger 4973 ft, abnd 5011 ft.

Clay County — Joy: Shell's Goad 2, 965 ft nsl and 670 ft ewl blk 20, H. Williams sur, pump 121 bbls, shot 20 qts 3987-4007 ft, td 4011 ft.

Clay County: Nicholson & Jones' Hamilton 3, 255 ft nsl and 2050 ft ewl blk 84, Byers sur, abnd 1156 ft.

Fortex Oil Corp.'s Dallas Stock Bank-Texaco 10, 635 ft from nw and 200 ft from sw lines of se-40 ac of nw-280 ac J. Duncan sur 35, pump 35 bbls broken sand 1116-49 ft.

Norwood and Anderson's Thornberry 1, 150 ft from nw and 835 ft from ne lines blk 11, Thornberry sur, abnd 1117 ft.

Perkins & Cullum's Taylor 7-C, 390 ft snl and 1170 ft ewl blk 43, Bacon sur, pump 77 bbls, 1076-90 ft.

Perkins & Cullum's Taylor 8-C, 460 ft from se and 550 ft from ne lines blk 43, Bacon sur, pump 51 bbls, 1074-92 ft.

Sussex Oil Co's Glascow 35, 550 ft from sw and 155 ft from se lines blk 34, Bacon sur, pump 97 bbls, 1053-65 ft.

Wilder Dr Co's Taylor 5, 2700 ft ewl and 1850 feet snl blk 33, Bacon sur, abnd 1081 ft.

Wilder Dr Co's Taylor 7, 1400 ft snl and 2650 ft ewl blk 33, Bacon sur, abnd 1250 ft.

J. L. Webb et al's Waggoner 1, 250 ft nsl and 450 ft ewl blk 32, Byers sur, abnd 1358 ft.

Cooke County: Benson Bros' Fleitman 1, 2291 ft nsl and 1300 ft wel A Peterson sur, pump 68 bbls oil, 40 water, 1009-20 ft.

Cooke County—Walnut Bend: Sinclair Prairie's J. M. Laura-McDaniel 1, 330 ft ewl and 660 ft nsl sw sec 2 leag 76, Winger 5583 ft, flow 691 bbls 31.7-gr 2-in, natural, perf 5583-95 ft, td 5613 ft.

Jack County: Chas. H. Kadane's Carter-Shell 15, TE&L 3312, abnd 270 ft.

Wichita County: Hull & Jones' Waggoner Bros. 3-A, 412 ft out nec lot 5, H. George sur, abnd 909 ft.

Magnolia's Goins 12, 1020 ft wel and 960 ft nsl blk 29, Red River V. L. sur, pump 12 bbls, sand 1811-33 ft, td 1835 ft.

Paradise Oil Co's Waggoner Est 2-D, 2024 ft nsl and 1350 ft ewl HT&B sec 14, A-505, abnd 2034 ft.

Paradise Oil Co's Waggoner Est 4-E, 480 ft snl and 50 ft wel GC&SF sec 2, A-531, abnd 2070 ft.

Texas Co.'s Waggoner Est. 440-A, 212 ft s and 425 ft w of m/e/ne corner TC 1, pump 9 bbls, shot 5 qts 534-544 ft.

Wichita County—West: A. R. Dillard-Dudley & Woods' Waggoner 1, 673 ft snl and 6415 ft wel Robt. Evans sur A-74, top KMA 4242 ft, abnd 4650 ft.

Young County: Belfort Oil Co.'s Dozier 2, 1625 ft from se and 467 ft from ne lines lse, I. L. Hill sur, flow 72 bbls ⅛-in, shot 48 qts 3792-3816 ft.

Sohio Producing Co.'s Morrison 1, 1005 ft snl and 1003 ft ewl N. E. Tracey sur A-1639, Bend 3580 ft, Marble Falls 4083 ft, Miss 4492 ft, Ellen 4635 ft, abnd 4737 ft.

NORTH TEXAS WELL DEEPENED

Cooke County: Humble's Hellman 14, J. Trussell sur A-1225, otd 1260 ft, pump 23 bbls, shot 50 qts 1243-90 ft.

NORTH TEXAS WILDCATS

Archer County — Failures: Henry Grace Prod. Co.'s Frerich 1, 1900 ft nsl and 600 ft ewl sec 106, blk 4, Clark-Plumb sur, abnd 1260 ft.

S. D. Johnson et al's Coleman 1, 330 ft out nec w½ sec 31, Wm. Coleman subd, Brazos CSL sur, elev 964 ft, Bend 5466 ft, abnd 6013 ft.

G. E. Kadane & Sons' Jones-Cullum 1-B, se se ne SP 2, A-916, KMA lime 4023 ft, abnd 4503 ft.

White & Duncan's L. Kinder 1, 330 ft out sec sec 111, blk 4, Clark-Plumb sur, abnd 1193 ft.

Young County—Allar Pool New Pay: Panhandle et al's Allar-Hunt Co. 1-C, 4012 ft snl and 523 ft wel of s-1185 ac of TE&L 3409, Bend 3567 ft, Marble Falls 4135 ft, Miss 4447 ft, Ellen 4482 ft, 12,500,000 gas natural, perf 4147-52 ft, td 4490 ft.

TEXAS PANHANDLE

Carson County: Skelly's Schafer 170, 440 ft out ne cor nw I&GN 197, blk 2, pump 310 bbls, shot 557 qts 2985-3090 ft.

Gray County: Phillips' Gordon-Step 2, 1981 ft snl 661 ft ewl H&GN 187, blk B-2, jkd and abnd 3152 ft.

Texas Co.'s Benedict 6, 1049 ft snl 1670 ft wel H&GN 55, blk B-2, pump 175 bbls, shot 400 qts 2935-3015 ft.

Hutchinson County: Gulf's Whittenburg 6-D, Tr. B, H&TC 27, blk 47, pump 157 bbls, td 2844 ft.

United States Wildcat Starts

ARKANSAS

Union County: Lion's Union Sawmill Co. 1, c ne ne sw 28-18-12, mim.

CALIFORNIA

Fresno County: Amerada's Furtado 55-36, nw nw se 36-17-19, Riverdale area, lcn.

Los Angeles County: Horace Steel, Operator's Kenwood 2, nw ne nw, 21-2-10, about ½-mi se of abnd Kenwood 1, Puente Hills area, lcn.

ILLINOIS

Clay County: Eason Oil Co. et al's C. Tucker 1, sw sw ne 2-4n-6e, dr.

Christian County: Emil Burgard's Essie Corzine 1, nw nw sw 11-12n-13, lcn.

Clinton County: Jack Darnell's Thien 1, nw nw sw 19-1n-3w, dr.

Fayette County: F. E. Webb et al's Mueller 1 (OWDD), se nw se 2-4n-1w, dr.

Franklin County: J. V. Canterbury's S. E. Webb 1, nw sw sw 4-5s-4e, lcn.

Jefferson County: E. A. Oberling's McClintock 1, sw ne nw 24-2s-2e, dr.

Saline County: Ross, Spiller & Gilliam's Sisk 1, se nw ne 15-10s-6e, lcn.

Shelby County: Texas Co.'s A. Ferguson 1, nw sw ne 1-11n-6e, lcn.

Washington County: Werner Bros.' Mueller 1, nw nw ne 3-2s-3w, dr.

INDIANA

Posey County: J. B. Barnes' Spencer 1, se sw nw 14-8s-14w, lcn.

KANSAS

Cowley County: Grallup, McNish et al's Dunn 1, ne se 28-34s-5e, rur.

Dickinson County: Wolf Creek & Crosbie's Brenizer 1, nw ne sw 35-12s-2e, lcn.

Grove County: Texon et al's P. L. Smith 1, ne ne ne 13-13s-28w, dk.

Graham County: Cities Service-Continental's Dodson 1, nw sw 28-9s-21w, lcn.

Morris County: Frank Dieter & McCole's Porter 1, nwc se 24-16s-9e, dr 415 ft.

Morton County: Eason Oil Co.'s Craver 1, se se se 32-34s-42w, lcn.

Ottawa County: Stanolind's Katherine Murphy Duggan 1, nw sw 12-12s-1w, lcn.

Rawlins County: Stanolind's O. Cahog 1, sw ne 20-1s-34w, lcn.

Rice County: Phillips' Click 1, se se ne 3-18s-7w, mim.

Stafford County: Stanolind's Florence Syms 1, s½ nw ne 20-21s-12w, lcn.

Atlantic's Nell 1, nw ne 27-24s-14w, lcn.

Barber County: Great Lakes Carbon's Gillespie 1, se sw ne 15-32s-12w, lcn.

Barton County: Falcon-Seaboard's V. & C. Denbo 1, nw sw sw 22-20s-13w, lcn.

Phil Han's Ludwig 1, ne ne sw 36-20s-13w, lcn.

Butler County: Solar Exploration Co.'s Baker 1, nec se 31-27s-4e, lcn.

Wakefield & Sunray's Lamumyon 1, sec nw 1-29s-6e, rust.

Ellsworth County: Falcon - Seaboard, Sinclair-Prairie and Harbor's Ed E. Janzen 1, nwc se 23-17s-8w, lcn.

Graham County: Davis-Childs Motor Co.'s El Scott, ne ne nw 7-7s-22w, lcn.

Kingman County: Herndon & Danneberg's J. M. McKena 1, c nw se, dr 1510 ft.

Leavenworth County: Chas. Miller's Stillings 1, c se se 1-10s-21e, rum.

Sedgwick County: H. H. Hershfield & Co.'s Gsell 1, c nw nw 34-26s-1w, lcn.

Stafford County: Atlantic's J. C. McCandless 1, sw sw se 30-25s-13w, lcn.

Sumner County: Barnsdall's W. A. Edwards 1, ne sw sw 16-31s-1e, dk.

KENTUCKY

Hopkins County: Sohio et al's J. A. Felker 1, 12-J-21, lcn.

NORTH LOUISIANA

Catahoula Parish: Joe Belt's Mrs. A. A.

Webb 1, 66n 2008e of sw cor 3-8n-5e, 4500-ft test.

Claiborne Parish: Hassie Hunt Trust's Hal Slaughter 1, 1980n 660e of sw cor 9-19n-5w, dr 9000 ft.

NEW MEXICO

Eddy County: Addison Oil Co.'s State 1, c ne sw 20-20s-28e, machine.

H. W. Martin et al's State 1, c se se 36-21s-27e, mim.

MICHIGAN

Chippewa County: E. R. Morris' Krettan 1, sw sw ne 7-41n-7e, lcn.

Newaygo County: W. A. Firth's Miller 1, sw se nw 9-13n-11w, rig.

Van Buren County: W. H. Clock's Kerr 1, nw nw se 13-1s-16w, lcn.

OKLAHOMA

Garfield County: Ace Gutowsky's Lee 1, sw sw 18-24n-5w, lcn.

Hughes County: Paul McIntyre et al's Brown 1, ne se nw 16-8n-10e, rur.

Kay County: Burk Dev. Co.'s Thain 1, nw sw se 27-28n-1e, lcn.

Logan County: Atlantic's Kerfoot 1, se se ne 31-18n-3w, lcn.

Muskogee County: W. H. Robins' Evans 1, sw ne nw 35-12n-19e, dr 250 ft.

Oklahoma County: Fox et al's Peterson 1, se sw 19-14n-4w, rur.

Payne County: Carter Oil Co.'s Bigler 1, ne se 31-19n-2e, c&p.

NORTH TEXAS

Archer County: White & Duncan's L. Kinder 1-55, 2300 ft snl and 300 ft wel sec 55, blk 5, Clark-Plumb sur, lcn 1300-ft test.

White & Duncan's L. Kinder 1-A-96, 990 ft nsl and 100 ft ewl sec 96, blk 4, Clark-Plumb sur, lcn 1300-ft test.

Childress County: Humble's Mollie Bennett 1, c sw sw W&NW Ry. 773, blk H, lcn 6500-ft test.

Cooke County: Bridwell Oil Co's E. R. Campbell 1, 1100 ft e and 600 ft n of m/w/sw corner of H. Williams sur A-1087, dr 335 ft.

EAST TEXAS

Cherokee County: B. A. Skipper et al's M. E. McClure 1, 660 ft out nec 160-ac tr, Martin Lacy sur, lcn 5500-ft Woodbine test.

Hopkins County: R. B. Campbell and A. G. Hill's J. W. Warren 1, 1980 ewl and 660 ft nsl of 102-ac tr and J. C. Sanders sur, 3½ mi se Cumby, rur for 6000-ft test.

Houston County: Fox and Butler's T. D. Craddock 1, 330 ft out nwc 80-ac tr, James R. Hart sur, lcn 3000-ft test.

Smith County: Arkansas Fuel Oil Co.'s P. Marsh 1, 660 ft out nwc 200-ac tr, T. M. Hawkins sur, Sand Flat area, lcn Paluxy test.

WEST CENTRAL TEXAS

Bosque County: John Coats et al's M. A. Callan 1, 1200 ft nsl 3330 ft ewl, Presley Bryant sur, Pat. No. 3-1130, lcn 3600-ft test.

Coleman County: L. H. Wentz et al's J. E. McCord 1, 990 ft out sw cor McCord-Lindsey sur No. 20, lcn 3750-ft test.

Jones County: Hickok-Reynolds & Joe Gallagher's J. E. Manley 1-A, ne ne sw T&P 35, blk 14, lcn 1950-ft test.

Ungren-Frazier et al's E. P. Mayes 1, 1250 ft ewl 330 ft snl of 140-ac tr, T&P 21, blk 17, lcn 3000-ft test.

Shackelford County: Roeser-Pendleton-Continental's Cook 2-A-145, 399 ft nsl 1533 ft wel ne¼ E.T. Ry. sec 145, lcn 3500-ft test.

Stephens County: Beacon O&R Co.'s Q. Corbett 1, 360 ft wel 810 ft nsl TE&L Co. sec 1070, lcn 4000-ft test.

WEST TEXAS

Crane County: Schermerhorn Oil Corp.'s McKnight 1, c sw sw PSL 27, blk 26, lcn 4600-ft test.

Ector County: Danciger Oil & Refineries, Inc's E. W. Cowden 1, 858 ft nsl and 1834 ft wel T&P 10, blk 42, T-3-S, mim for 5200-ft test.

Garza County: M. L. Richards and R. E. Carter's K. Stoker 1, sw se nw GH&H 32, blk 5, lcn 3200-ft test.

Irion County: Shell's Tankersley Est. 1, 1660 ft snl and 1653 ft wel GC&SF sec 12, lcn 7500-ft Ellenburger test.

Pecos County: E. A. Ungren and A. J. Frazier's Jasper CSL 1, 662 ft ewl and 4620 ft nsl blk 104, Jasper County School Lands, lcn 3000-ft test.

Yoakum County: Humble's H. T. Fillingim 1, c se ne sec 661, blk D, J. H. Gibson sur, lcn 5500-ft test.

Hickok P&D Co-Harry Reynolds Price 1, c ne ne sec 342, blk D, J. H. Gibson sur, lcn 5500-ft test.

SOUTHWEST TEXAS

Duval County: Bridwell Oil Co.'s Taft 1, 495 ft fr s&wl ne¼, J. Poitevent sur 49, 1½ mi w Government Wells field, lcn.

Taylor Refining Co.'s Sepulveda 1, Muralla 1, 160-ac lse, Juan A. Ruiz sur 12, lcn 5000-ft test.

SOUTH CENTRAL TEXAS

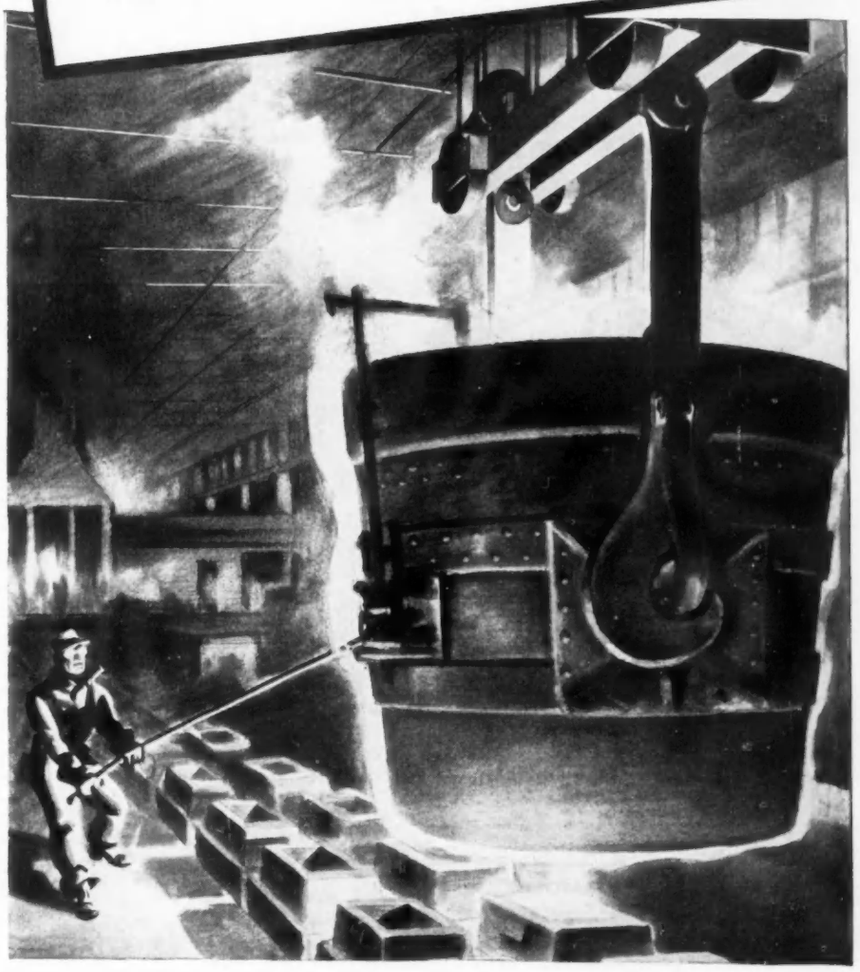
Guadalupe County: W. H. Bird's Dibrell 1, 26-ac tr, F. W. Hubert sur, 8 mi s of Seguin, lcn.

Jos. H. Burt's Hartfield 1, 130-ac tr, E. Smith sur 6, lcn 2200-ft test.

LOWER TEXAS COAST

Bee County: Windsor Oil Co.'s O'Brien 1,

THE HAND THAT ROCKS THIS CRADLE NOW HELPS TO ROCK THE AXIS!



FOR many years the "Men of Harrisburg" have been pouring these huge ladles of steel into ingot moulds which is the first step in the manufacture of Seamless and Drop-forged Steel Products. Since 1853 the Harrisburg Steel Corporation has been making products of peace for industry everywhere but now, in ever increasing volume, we will continue to supply the "sinews of war" that will help to rock the axis back on its heels and bring that final victory to America and her allies.

H

HARRISBURG STEEL CORPORATION

HARRISBURG, PENNSYLVANIA

Standco
NO-SMOKE
STANDCO BRAKE LINING
for the easiest brake known. It "feeds off" evenly. Standco never scores brake rims. See page 2257 Composite Catalog.
Standco Brake Lining Co.
HOUSTON

Bottom Hole Pressures
Temperature Surveys
Gas/Oil Ratios
ASSOCIATED ENGINEERS
GAS LABORATORY
1912 WEST GRAY HOUSTON, TEXAS

NEED
PITS DUG?
Call Us for
TANDEMS - CATS - DRAGLINE
Excellent Equipment, Skilled Operators
Service Anywhere
HILL & HILL
4400 COCHRAN STREET HOUSTON, TEXAS
C-4-5571

HOUSTON LABORATORIES
Analytical and Consulting Chemist
Podbielniak Gas Analysis
Oil Field Brines, Waters and Cores
Complete Evaluation of Crude Oils
Long Distance 267, Box 132, Houston, Tex.

THE FORT WORTH LABORATORIES
Analysis of oil field brines, cores, gas, oil and minerals. Field gas testing. R. H. Fash, Vice President; Long Distance 138. 823½ Monroe Street, Fort Worth, Texas

William M. Barret, Inc.
Consulting Geophysicists
Specializing In Magnetic Surveys
Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique.
GIDDENS-LANE BUILDING
SHREVEPORT, LOUISIANA

Blanconia area, Michael O'Donnell sur, lcn 5000-ft test.

Calhoun County: Auto Ordnance Corp.'s Bierman 1, 250-ac tr, P. Mirando sur, lcn.

Karnes County: Charles E. Fraser's Ruhman 1, 300-ac tr, Willis Orton sur, 3½ mi sw Hobson, lcn 7000-ft test.

Albert Plummer's Kinnear 1, 40-ac tr, Brooks & Burleson sur, 4 mi se Ringe, lcn 8500-ft test.

Live Oak County: Charles E. Fraser's Atkinson 1, 1980 ft e of wl Atkinson tr and 4000 ft n Frio river, Louis Ayers sur 3, lcn 7000-ft test.

Refugio County: Fred M. Wood's Zarsky's 1, 155-ac tr, sec 45, Bonnie View Rch, Guadalupe Coblan Gr, lcn 6500-ft test.

TEXAS GULF COAST

Brazoria County: Salt Dome's Martin 1, Arcola area, 40-ac tr, HT&B sur, A-299, lcn 8500-ft test.

Colorado County: Ohio Oil Co.'s McDermott 1, 695-ac tr, AB&M sur, 4 mi w Nada, lcn 6700-ft test.

Hardin County: Sun's Barfield 1, 1 mi ne Sour Lake townsite, se cor 87-ac tr, W. Berryman sur, lcn 7500-ft test.

Liberty County: W. W. West's Fee 1, sw flank Davis Hill, 380 ft fr nl & 250 ft fr wl 586-ac lse, J. D. Martinez sur, lcn 6500-ft test.

Tyler County: Jack Frazier & John Mayo's Rice Est. 1, nw cor James Sims sur, lcn 9000-ft Wilcox test.

Wharton County: Texas Co.'s Hillyer 1, 158-ac tr, Morris & Cummings sur, sec 31, 4 mi se Louise, lcn 7000-ft test.

Squeaks from the Bull Wheel

The Greater Fault

"Good gracious, how terrible!" exclaimed the professor as he finished reading the note left behind by his daughter who had run away.

"Whatever is the matter, dear?" asked his wife, concerned at his obvious distress.

For answer, the professor handed her the leter to read.

"So she's eloped with that nice-looking officer," was the lady's calm comment. "Well, I can't say it's quite unexpected."

"But she spelt 'eloped' with two ls" moaned the man of learning.

Ho, Sailor

He: "I'm not feeling myself tonight."
She: "You're telling me!"

Despair

"Are you keeping a hope chest?"
"With a chest like mine, there is no hope."

Retreat

From London comes the story of the RAF pilot who made a forced landing in Belgium and was rescued by a nun. She shepherded him into her convent, handed him a complete set of nun's accoutrements, and counselled "Lie low. Say nothing. Be as inconspicuous as possible. Sooner or later we will find a way to spirit you back to England." For eight weeks the pilot spoke to no one, shaved eight times a day, was a model convent habitant. One evening, however, he spied a beautiful young sister alone in the pantry, and on a sudden impulse, swept her into his arms. A moment later he was reeling from a terrific sock on the jaw. "'Ere, 'ere, you rum bloke," spoke a deep, masculine voice, "'Old yer 'orses, carn't yer? I been 'ere since Dunkerque!"

The Bare Facts

The pastor of a certain poverty-stricken colored congregation down in Alabama made life miserable for his bishop by his numerous and heart-rendering applications for aid. At length the bishop informed him in no uncertain terms that in the future such appeals would be entirely ignored.

The bishop enjoyed a brief respite from the begging brother, but at length came another letter bearing the familiar postmark of the needy minister's little village. Shuddering, the bishop opened the communication and read:

"Dear Bishop:
"This here ain't no appeal.
"It's a report.
"I has no pants!"

Expecting Too Much

"Doctor, will the anesthetic make me sick?"

"No, I think not."

"Well, how long will it be before I know anything?"

"My dear sir," responded the exasperated medico, "aren't you expecting almost too much from the anesthetic?"

Skepticism

Fish dealer: "Lobsters, madam; nice lobsters? Look they're all alive."

New Bride: "Yes, but are they fresh?"

It's The Help Shortage

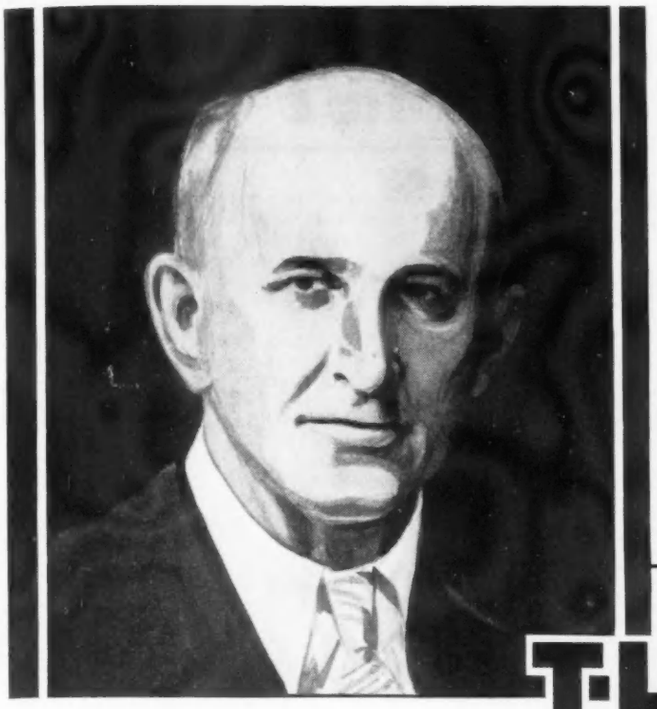
"And of course I want the kitchen floor clean enough to have our meals on."

"What will the neighbors think?"

"About what?"

"Your eating on the floor!"

PAW Form 35
(10-43)
Application for Allotment of Controlled Materials Petroleum Production Operations.
FOR SALE OUT OF STOCK BY
Stock Forms Dept.
GULF PUBLISHING CO.
3301 Buffalo Drive
HOUSTON, TEXAS
Telephone Hadley 3141



THIS MAN

IS A FRIEND OF YOURS

He's a typical Jarecki store manager — friendly, competent, co-operative.

He makes it his business to study the needs of the territory he serves — and patterns his stock accordingly.

Behind him is a tradition of service stretching back to 1852, when the first store was established. Cooperating with him in meeting the needs of oil men is a chain of stores strategically located throughout the oil country, and operated by equally competent men.

The Jarecki store manager is a pleasant fellow to know, and a good man to get in touch with when in need of supplies.

JARECKI
MANUFACTURING COMPANY
"Since 1852"

General Offices: St. Louis, Mo. Home Office and Factory: Erie, Pa., U. S. A. District Offices: Tulsa and Bartlesville, Okla.; Dallas and Houston, Texas; Mt. Pleasant, Mich.; Centralia, Ill.; Owensboro, Ky.

Branch Stores at All Important Places in the Oil Country

Notes for the Equipment Buyer and User

Fred E. Cooper Celebrating Twenty-five Years Progress in Equipment Development

A nebulous idea, conceived and nurtured to a feeble start 25 years ago in the seemingly unrelated atmosphere of a bicycle shop, furnished the foundation for one of the oil industry's outstanding lines of mobile well-servicing units. Small wonder then, that Fred E. Cooper, Tulsa, manufacturer and distributor of Allis-Chalmers oil-field well servicing equipment, takes pride in the twenty-fifth anniversary in the business he founded and developed.

Modern well servicing units, with their highly selective ranges of power, speed, weight and auxiliary equipment are a far cry from the first Rumely tractor with winch attached, which Fred E. Cooper demonstrated to skeptical production men in the Ponca City area a quarter of a century ago. Development of full integrated and portable well-servicing and drilling equipment on the whole has been a gradual refinement of the original machines, and Cooper has played an important part in this progress.

First tractors of the Advance-Rumely Company, with whom Cooper signed a manufacturing contract in 1918, to which a Cooper winch was attached, had a road speed of four miles per hour. This, however, was much faster than the time then required by heavy engines in use for cleanout and other well-servicing operations. The first Rumely oil-pull winch tractor made its appearance in 1920. It was six years later that Cooper developed the first skid winch for truck mounting.

FRED E. COOPER

Circulating air-cooled brakes on the winches are a patented feature of all Cooper units. These brakes were developed by Cooper, and were introduced in 1932. In all cases, irrespective of braking surface, lining is installed and furnished in 8-inch widths or less. The patented fins are so arranged and constructed as to force air into the zone of contact between the drum and brake band, resulting in a satisfactory cooling system for portable hoisting equipment.

The scope of oil field use was widened in 1932, when Allis-Chalmers applied the first rubber tires to winch tractors.

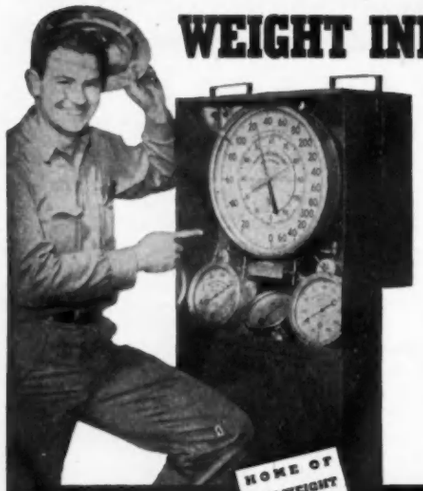
It was in 1935 that the first standardized double-drum winch tractor was introduced to the oil industry, and that Cooper opened a new plant at Hale Station, Tulsa, which now houses the largest organization devoted exclusively to the manufacture, sales and service of oil field winch tractors, skid winches and power units.

When the Rumely company merged with Allis-Chalmers Manufacturing Company in 1931, Fred E. Cooper's arrangement with the manufacturer was continued. This arrangement is unique in the petroleum equipment industry. Tractors are built to Cooper specifications, including special transmission and wheel brakes. The manufacturing operation performed by Cooper in producing well servicing equipment and oil field power units includes a wide range of modification and installation of special equipment. In some combinations, little remains of the original tractors delivered to Cooper's plant, except the engine. The narrow, conventional tractor front axle is replaced with one that separates front wheels to standard highway gage. Single or dual winches for pulling and running rods, tubing, drill pipe, bailer, fishing tools and drilling bits are installed at the option of the purchaser. Either telescoping single or double-pole masts are installed on the unit.

Tractor and skid-mounted units are designed for specific ranges of service, but the margin of flexibility of all models embraces functions of drilling, servicing, reconditioning, deepening and completing wells.

Cooper and Allis-Chalmers tractor-type well-servicing units are available in four general models, but optional equipment of dual drums increases the selectivity. For service in areas where seasonal mud hampers transportation of heavy equipment, units are available with dual balloon tires on each rear wheel and balloon tires on front, imparting a "floating" buoyancy that permits portability in all weather short of floods.

Maximum line pull by tractor type servicing units is 66,730 pounds for the Model L which is equipped with a 6-cylinder, valve-in-head motor with 5¼-inch bore and 6½-inch stroke. Displacement of the engine is 844 cubic inches. Rotary drive and spudding equipment is available for all winch units. Telescoping masts are available. The Model L has eight line speeds on the drum, ranging up to 1059 feet per minute at 1200 r.p.m. on the engine. The most recent designed spudder attachment is of the variable stroke, crank type. The crank is equipped with four pin holes, giving tool strokes of 27, 35, 43, and 55 inches. The mast for all Cooper units



WEIGHT INDICATOR POINTS

GET FULL DRILLING INFORMATION . . . When you install a "Sealtite" it indicates and records weight on bit, mud pump pressure, and torque in drill pipe. Rotary table speed is indicated and recorded so you **know** you're drilling a better well at less cost. This master drilling instrument really controls operations instantly, accurately **at all depths on any well.**

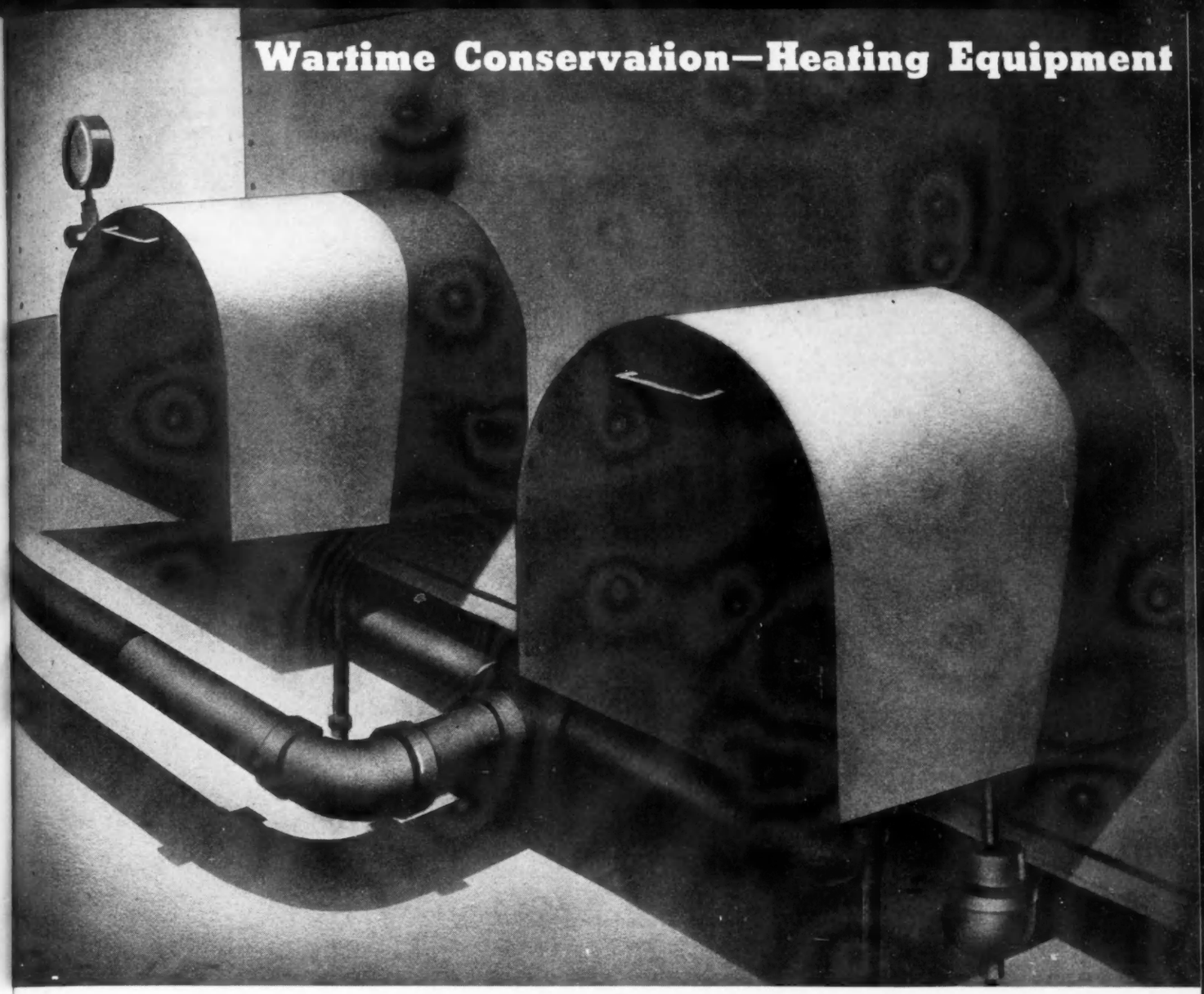
HOME OF THE WEIGHT INDICATOR

MARTIN DECKER CORP.

LONG BEACH, CALIFORNIA

SAN JOAQUIN VALLEY: A. F. McQUISTON, BAKERSFIELD, CALIFORNIA
MID-CONTINENT DISTRIBUTOR: REED ROLLER BIT COMPANY, HOUSTON, TEXAS

Wartime Conservation—Heating Equipment



Information supplied by "Oil Weekly"

Close regulation of flame and oil flow on lease-treating equipment is necessary if the emulsion is to be broken down, and at the same time the oil is not to be overheated to the point where its characteristics change.

Since most lease operations are not housed, but are exposed to wind and weather changes, hoods over the burners set into the treaters will prevent the rapid changing of draft conditions due to gusty draft, and will extend the life of equipment and improve the grade of oil through maintenance of exact temperature settings.

Hinges at the upper edge of the hood support it from the treater shell, and permit quick access to the setting for burner change or service.

By setting the hood high enough to insure ample draft clearance at the base, no change is made in the firing characteristics of the unit through addition of the protection to the standard set-up.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

ARMY E NAVY

MOLYBDIC OXIDE, BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Climax Molybdenum Company

500 Fifth Avenue · New York City

MOLY

are built with deep groove sheaves made of manganese alloy steel, 23 inches in diameter. Sheaves are ball-bearing mounted on a 2¾-inch alloy-steel shaft.

The engine has a continuous operating range of 600 to 1200 r.p.m. Torque is 500 foot-pounds at 650 r.p.m. Engines operate either on gasoline, butane, natural gas or distillate.

The smallest unit of the Allis-Chalmers and Cooper line of tractor-type servicing units is the Model W which resembles its larger companion assemblies, except that the engine, winch, weight and other characteristics are scaled down in order to provide a compact streamlined unit built to handle up to 3500 feet of 2-inch tubing, or other well-servicing assignments involving weights within the maximum line pull of 20,666 pounds.

The Model L drilling unit is the heaviest machine in the Allis-Chalmers and Cooper line. It is available as a winch tractor or as a skid winch unit for servicing the deepest wells. The transmission in this unit is built especially to withstand the heavy shocks in the deeper services to which it is customarily assigned, and for the more severe conditions encountered both in rotary and cable-tool drilling. The transmission is not the conventional automotive type. On the contrary, the heavy-duty gears are manufactured in the Cooper plant from alloy steel and are subjected to run-in tests which assure as far as possible trouble-free operation in the field. The unit is powered with a slow-speed 6-cylinder power unit which has a bore of 5¼ inches and a stroke of 6½ inches, a piston displacement of 844 cubic inches.

When designed specifically for rotary or cable-tool drilling the Model L unit is equipped with two drums, cathead, rotary drive and spudding equipment.

Tractor-type equipment customarily is furnished with supports for cradling the mast across the longitudinal axis of the unit. Clamps hold the mast, whether it be the telescoping single or double-pole type, to the supporting members which extend above the maximum height of the winch drum and other mechanism. The forward support of the mast cradle serves as fulcrum over which the mast is hoisted into an upright position. Hoisting lines are attached to the base of the mast and are taken up by the regular winch which is an integral part of the machine. The masts are available in extended heights of 40 to 60 feet, depending on the size of the unit and the work it is expected to perform.

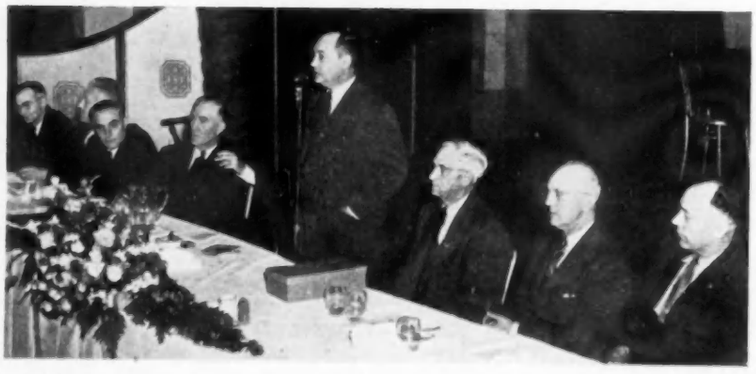
Manufacture and distribution of well-servicing and oil-field power units are only two of the three functions performed for the petroleum industry by the Fred E. Cooper organization. The third function, and one which testimonials indicate is most valuable in field operations, is the servicing of units. All engine and equipment parts are standardized to a degree uncommon in the petroleum or any other industry. Many parts for the various sized units are interchangeable, giving operators in the field maximum protection against enforced idleness of equipment regardless of the degree of essentiality of work in which the units may be engaged.

A complete stock of repair parts is maintained at the Cooper plant and distribution centers. Overnight service on repair parts is one of the features on which the organization has been built.

The Tulsa plant is organized on an assembly-line basis. A new order for a specific model of well-servicing or power unit goes to the stockroom where every part required for the manufacturing operation, down to the smallest key, is collected by the storekeeper and transferred as a unit to the shop. Special equipment to meet specifications of the particular user of the unit to be built is made in the shop. Brakes are turned out on precision lathes and ground to a mirror polish. Brake drums are weighed on a wheel-spinning machine and counterbalanced to avoid vibration and uneven wear on the brake lining and band. Sprockets and special gears are machined in the Cooper shop. Power shafts are installed, control levers mounted and connected, road gears adjusted and other steps taken in the manufacturing operation.

E Award Made to Chiksan Tool Company

Chiksan Tool Company, Brea, California, was presented the Army-Navy "E" pennant for excellence in war production November 19. The presentation was made by Rear Admiral J. R. Defrees, U. S. N. retired, and was accepted by W. Edgar Spear, president of the company. "E" pins were awarded by Lieutenant Colonel Henry E. Beal, U. S. A., and accepted by Van J. Kubin, oldest Chiksan employe.



Baker Oil Tools, Inc., held its second annual service pin banquet for its California Division, recently. Left to right above are R. C. Baker, Jr., S. J. Ralston, G. M. Anderson, E. E. Pyles, Guest Speaker, T. Sutter, R. C. Baker, C. A. McDonald, A. C. Pazdernik, all 20-year service men, as are T. H. Arney, A. A. Baker and A. H. Lake, who were unable to be present. Thirty-one employees were given pins representing five years or more of service. Eight employees of the Central Division received service pins at a similar banquet at Houston.

Thornhill-Craver Resumes Production After Fire

Although the manufacturing plant of Thornhill-Craver Company, 1701 Lockwood Drive, Houston, was seriously damaged by fire on the night of November 16, officials of the company state that the heavy equipment was not materially damaged and that production has been resumed. Only slight damage was done to the large stock of finished products stored in the plant. Temporary buildings to house the company's machinery and workers were erected immediately after the fire and construction has started on a new structural steel plant building.

Cooper-Bessemer's New Film Shown at API Meeting

A motion picture, "Continuous Performance," depicting progressive stages in research, engineering and production of Cooper-Bessemer compressors and diesel engines, had its first showing to an industrial group at the annual meeting of the American Petroleum Institute at Chicago.

Army-Navy E Awarded Steel Castings Company

Oklahoma Steel Castings Company, Tulsa, recently was awarded the Army-Navy "E" flag for excellence in production of war materials. The company made an outstanding record during 1942, evidenced by the fact that of 1255 "heats" of special analysis steel requiring high physical qualities, only three were rejected as being below standard.

National Security Award Made to Mack Trucks

Mack Manufacturing Corporation, Empire State Building, New York, has been presented the National Security award. This is a citation granted by the Office of Civilian Defense to plants and facilities which have achieved outstanding success in programs for the protection of employes, plants and production or service operations against fire, explosion, air raid, accident and other emergencies.

Los Angeles Nomads Elect New Members

The Los Angeles Chapter of Nomads held its regular monthly dinner meeting November 10, featuring talks by members and others recently back from foreign operations. President Henry Pullman opened the meeting and turned it over to the master of ceremonies for the evening, Pete Maxfield. Two new members were inducted: Jack S. Smith, regular, and Owen P. Lake, associate. Bart Gillespie, present after a period of active duty in the Aleutians as Commander in the Navy, was presented with a certificate of honorary membership. He told about the work of ex-oil men who were with him in the Aleutians.

Judge Dodge, recently returned from Mexico City, talked on the petroleum situation there. Phil McConnell of the California Arabian Standard Oil Company spoke on general conditions in Saudi Arabia, to which he will shortly return. The speaker of the evening was Capt. Paul Perigord, captain in the French Army during World War I, now professor of civilization at U. C. L. A., who discussed the war situation in general.

Why DEDMAN

assures you the highest quality steel castings obtainable.

DEDMAN HAS THE EQUIPMENT:

1. The latest type electric furnace with mechanical pouring by finger-tip electrical control.

2. One of the finest laboratories for analysis control equipped with extremely accurate scales, carbon combustion train, Tinius Olsen testing machine, permeability machine, moisture teller, sand strength testing machine — these and many other kinds of scientific equipment such as are found only in the best steel testing laboratories.

☆

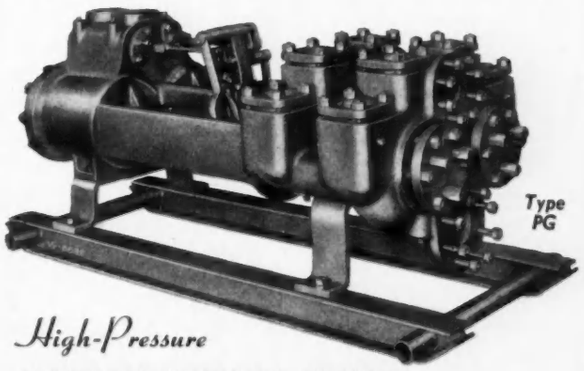
Arrange with Dedman now for your post-war source of better steel castings.

DEDMAN
FOUNDRY & MACHINE CO.
HOUSTON, TEXAS

Easy-to-read, *raised* black graduations on crack-proof white surface... resist abrasion from oil, sand, scraping on the pipe pile, etc. In all sizes and types—in cases or reels. Ask your dealer—or write for catalog.

EST. 1867
KEUFFEL & ESSER CO.
NEW YORK • HOBOKEN, N. J.
CHICAGO • ST. LOUIS • SAN FRANCISCO • LOS ANGELES • DETROIT • MONTREAL

LOCKETT-WORTHINGTON



High-Pressure
DUPLEX STEAM PUMP

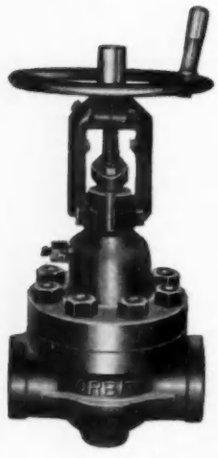
Dependable performance is typical of both Worthington Pumps and Lockett Dealer Service to companies producing and handling oil. Worthington Pumps and *genuine* Worthington Repair Parts are available — through Lockett Dealers — from Warehouses maintained in the principal oil fields of Texas and Louisiana, backed up by a large replenishing stock at our Houston and New Orleans Warehouses.

Whatever your pumping problem may be — whether you require a pump or a complete pump unit for a specific type of work — you are assured of getting prompt, dependable service through a Lockett Dealer.

A. M. LOCKETT & COMPANY, LTD.
NEW ORLEANS HOUSTON DALLAS

ORBIT VALVES

Are Built to "Take It"



ORBIT FLOW LINE VALVE

A full round opening valve that operates easily under high pressures. No grease required to effect a seal. Compact in design, yet built to "take it."

•

YOUR ORBIT VALVES

will last for the duration. Meanwhile, if you have any questions regarding their care or maintenance, write us.

•

OIL WELL IMPROVEMENTS CO.

SINCE 1912

TULSA, OKLAHOMA

Men in the Industry's News

ROBERT E. HARDWICKE, Fort Worth oil attorney who has been serving as a special consultant since last January, has been appointed as associate chief counsel by PAW. Before going to Washington, Hardwicke was a member of the firm of Hardwicke and Cheek. Prior to associating with that firm in 1933, he had been a member of a Beaumont law firm and had also been attached to the legal staff of subsidiaries of the Gulf Oil Corporation in this country and in Venezuela.

JOSEPH M. WILSON, consulting geologist, has been elected president of the Dallas Geological Society, which will be host when the American Association of Petroleum Geologists holds its annual meeting next May. Henry C. Cortes, Magnolia Petroleum Company, and H. C. Vanderpool, Seaboard Oil Company, were chosen vice president and program chairman and secretary-treasurer, respectively. Installation of the new officers will occur early in January.

CHARLES R. CANFIELD, geologist for Stanolind Oil & Gas Company in West Texas, has been transferred to Wichita Falls, where he will have charge of the company's new district office.

C. W. SANDERS, regional and research geologist with Shell Oil Company, has resigned to work as a consultant in Houston. During 17 years with the Shell group he worked in the Mid-Continent, Eastern Rocky Mountains, California and the Gulf Coast. He also spent one year at the groups former headquarters at The Hague.

RALPH U. FITTING, Jr., Shell Oil Company production and appraisal engineer in West Texas and New Mexico, has resigned to operate as a consultant at Midland, Texas. He received a degree in geology from Leland Stanford University, then a degree in petroleum engineering by taking a post-graduate caurse at University of California.

JOHN M. CRAWFORD resigned recently as president of The Parkersburg Rig & Reel Company, Parkersburg, West Virginia. Founder of the company in 1897, he retires after 47 years of service. In this time he was largely responsible for raising his company to a leading position in oil-field equipment manufacture and extending its activities into every oil-producing country in the world. He retains his position as chairman of the board of directors. A. Sidney Knowles has been elected to succeed Crawford as president. He has been active in the operation of the company since becoming a member of the board of directors in 1936. He served in this capacity until October, 1942, at which time he was elected executive vice president.

J. M. Crawford

A. S. Knowles

MAURICE A. FINNEY, assistant division superintendent for Pure Oil Company at Ft. Worth, Texas, has been named manager of the Illinois Producing Division at Olney, Illinois, and W. M. Peck, who held the position at Olney has been moved to managership of the Michigan producing division.

O. D. HARPER, district superintendent in the St. Elmo, Illinois, office of The Carter Oil Company has been promoted to district superintendent of the Dix district with headquarters at Carmi, and T. K. Whittington assistant at St. Elmo has been named to succeed him. H. R. Shannon, superintendent of the Carmi office has been named to a similar position as district superintendent of properties recently acquired by the company in Montana and Wyoming. V. V. Horner of Owensboro, Kentucky, and formerly of St. Elmo has been named district engineer in the Montana and Wyoming district.

G. M. McLAUGHLIN, Sherman, Texas, succeeds R. W. Jernigan as secretary and treasurer of Pipeline Contractors, Incorporated, Tulsa.

Advertisers' Index

*Indicates detailed information on products and services included in 1942 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

The Louis Allis Co. ..... Insert, 24-25
*American Roller Bearing Co. 46
Associated Engineers 58
*Baash-Ross Tool Co. 31
*Baker Oil Tools, Inc. 1
*Baldwin-Duckworth Division, Chain Belt Co. 4
Wm. M. Barret, Inc. 58
*Bowen Co. of Texas 32
*Brown Oil Tools, Inc. 32
Jo H. Cable 38
*Cardwell Manufacturing Co. 21
*Chain Belt Co. 4
*Climax Molybdenum Co. 61
*Fred E. Cooper ..... Insert, 32-33
Dedman Foundry & Machine Co. 63
The Eagle-Picher Lead Co. 54
Foote Bros. Gear & Machine Corp. 5
Ft. Worth Laboratories 58
The Gates Rubber Co. 2
*Halliburton Oil Well Cementing Co. ..... I Cover
*Harrisburg Steel Corp. 57
*Hazard Wire Rope Division, American Chain & Cable Co. ..... III Cover
Hill & Hill 58
Houston Heat Treating Co. 45
Houston Laboratories 58
Houston Slush Pump Repair Co. 23
*Hughes Tool Co. ..... IV Cover
Jarecki Manufacturing Co. 59
*Johns-Manville Corp. 38
*Keuffel & Esser Co. 63
*Kobe, Inc. 19
*Link-Belt Co. 6
A. M. Lockett & Co. 63
*Martin-Decker Corp. 60
*McCullough Tool Co. 27
*McEvoy Co. 43
*McKissick Products Corp. 47
*Mission Manufacturing Co. 29
*Oil City Brass Works 56
Oilfield Salvage Co. 44
*Oil Well Improvements Co. 64
Oil Well Supply Co. 3
*The Parkersburg Rig & Reel Co. 51
*Patterson-Ballagh Corp. 53
*Pelican Well Tool & Supply Co. 48
Petroleum Electric Power Assoc. 55
Petroleum Rectifying Co. 40
*John A. Roebling's Sons Co. 8
Roosevelt Hotel 38
*Standco Brake Lining Co. 58
Sterling Gasket & Packing Co. 56
*Thornhill-Craver Co. 32
*Universal Atlas Cement Co. ..... II Cover